SURVEY SECTION

TEXAS HIGHWAY DEPARTMENT

Construction & Maintenance

BULLETIN No. 20

Feb, 1953

A NEW "HEIGHT" IN SIGNS

About the Cover . . .

New D-1A destination signs replace the former DM-1 destination signs as the standard design on the State Highway System at Y intersections, junctions where routes diverge, and intersections with four separate turning lanes. The new D-1A sign is an AASHO standard which has the following advantages over the previously used DM-1 signs: (1) more economical to construct and maintain, and (2) less degree of obstruction to sight distance at intersections. Both the D-1A signs and the route markers shown in the picture are mounted at the new mounting height of three feet, six inches recently adopted as a Highway Department standard. Roger Q. Spencer, of Maintenance Division, measures the new height.

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Construction and Maintenance Bulletin

The purpose of the *Construction & Maintenance Bulletin* is to furnish a medium for presenting practical information applicable to current highway problems. These conclusions and data are not necessarily endorsed by the Highway Department nor are they to be construed as instructions. Employees are invited and urged to submit suggestions and relate experiences which would benefit those engaged in the construction and maintenance of highways.

Photographic services are available and other assistance may be obtained, if desired, in preparing material for submission. All material and comments should be directed to the Chief Engineer, Construction and Maintenance, Austin 14, Texas.

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PUBLISHED JOINTLY BY

Maintenance Division	D- 3
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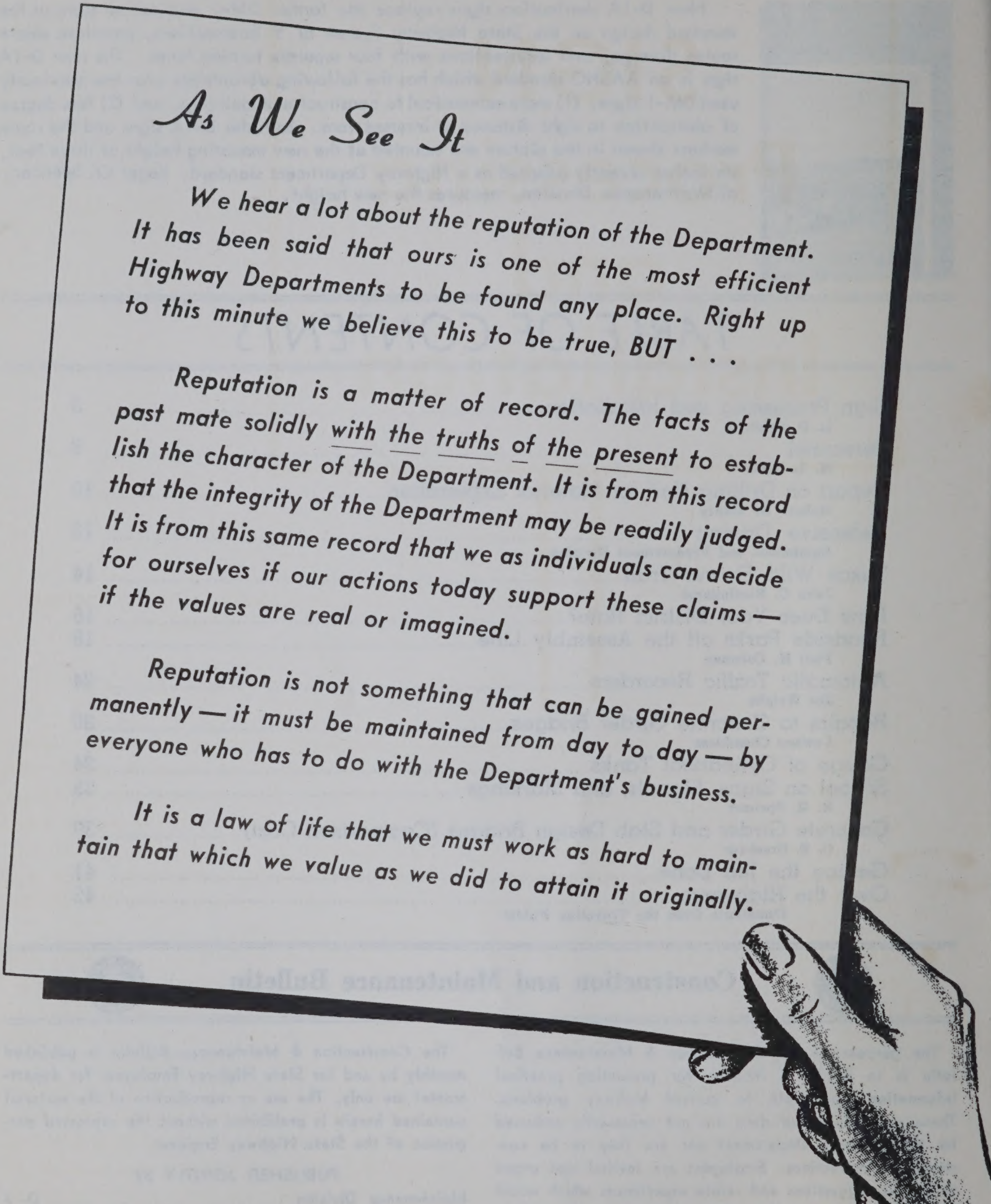
Traffic Services Division	D-16

COMPILED AND EDITED
Traffic Services Division, INFORMATION SECTION
REPRODUCED
Operations Division, REPRODUCTION SECTION



As We See It

We hear a lot about the reputation of the Department. It has been said that ours is one of the most efficient Highway Departments to be found any place. Right up to this minute we believe this to be true, BUT . . .

Reputation is a matter of record. The facts of the past mate solidly with the truths of the present to establish the character of the Department. It is from this record that the integrity of the Department may be readily judged. It is from this same record that we as individuals can decide for ourselves if our actions today support these claims — if the values are real or imagined.

Reputation is not something that can be gained permanently — it must be maintained from day to day — by everyone who has to do with the Department's business.

It is a law of life that we must work as hard to maintain that which we value as we did to attain it originally.

SIGN Processing and Installation

L. D. Cabaniss, District Engineer
District 1

The following pictures show the operations and equipment of the District Sign Crew, including various phases of the work.

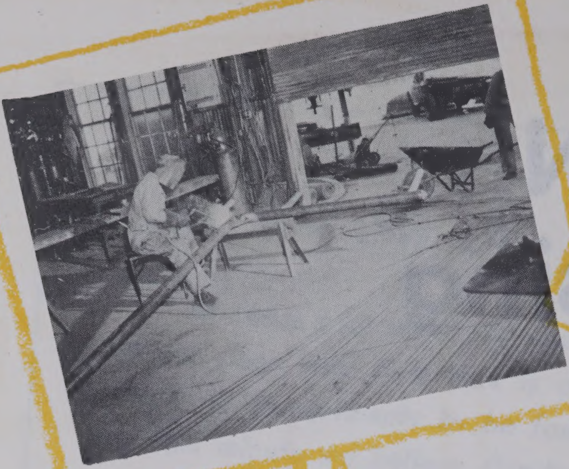
The District Shop Sign Crew furnishes processed signs and makes the original installation of signs on new jobs. The Maintenance Foreman advises the District Shop a few weeks prior to completion of a new road so signs can be processed, and again advises when the road is complete and ready for signs.

For routine installations, signs are located on the ground by the Special Foreman in charge of the District Sign Crew. For complicated intersections, a plan is worked out by the Special Foreman and the Associate District Traffic Engineer. A drawing is made and submitted to the District Office for approval prior to erection of the signs.

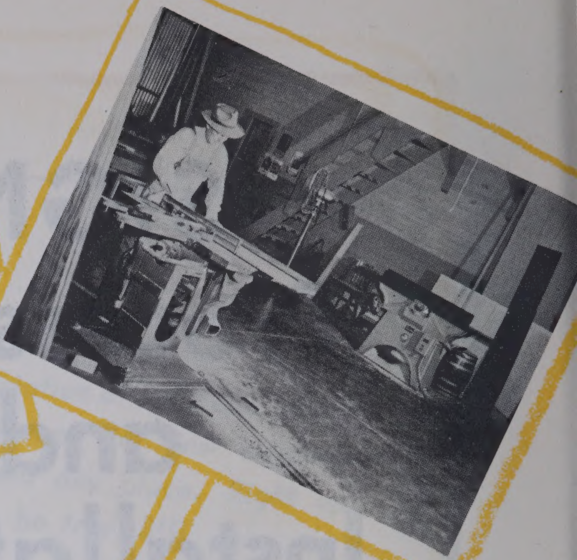
For this work, a pickup and two trucks with special beds are used. The pickup is used by the Special Foreman in charge of the sign work. Generally, a crew of two men is used with each truck. The trucks may operate on different jobs or on the same one, depending on the size of the operation. When necessary, additional men and equipment are furnished by the Maintenance Foreman.

In addition to installing signs, the District Sign Crew uses special equipment for painting structural steel on small bridges and makes adjustments and repairs on signal lights.

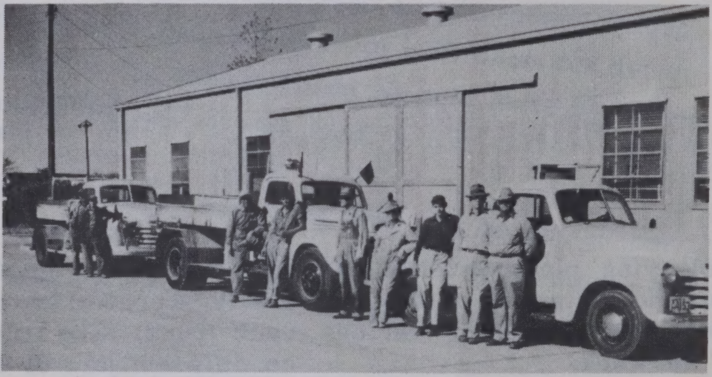
It is the responsibility of the Maintenance Foreman to inspect and provide for maintenance of the signs in his section. In many cases, he is able to replace signs from his stock of extras. If not, he advises the District Shop. If practical, one of the District Crews provides the signs and makes the replacements. If both District Crews are tied up on urgent work, the signs are provided by the District Shop, to be erected by Maintenance Forces.



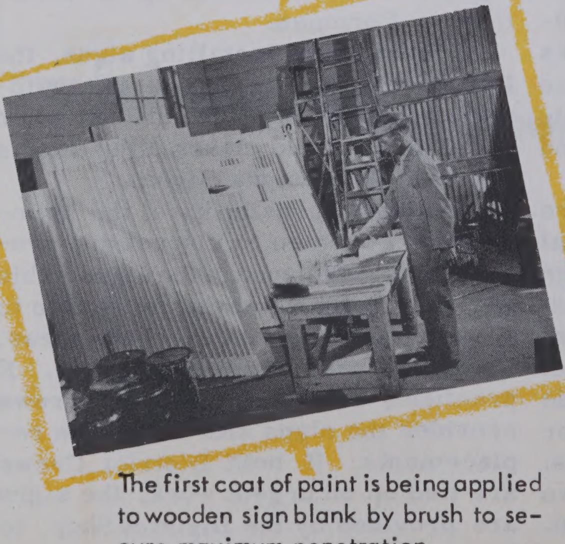
Three-inch pipe sign standards being fabricated in District Welding Shop. These are preferred by District 1 over the usual threaded pipe connections.



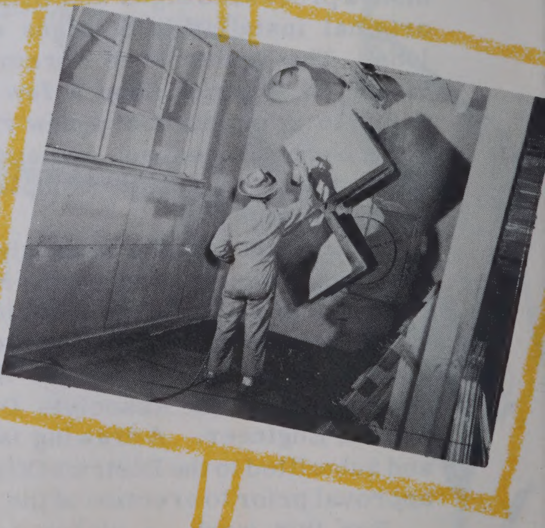
Here, lumber is being ripped to size for wooden sign. The joiner can be seen in the background.



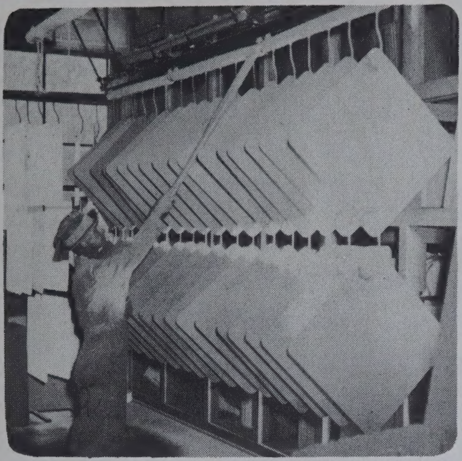
Sign Shop, sign truck, and crew.



The first coat of paint is being applied to wooden sign blank by brush to secure maximum penetration.



Spray painting metal sign blanks. --Note exhaust fan--



Signs hang in a drying room. Note movable racks on overhead trolley.

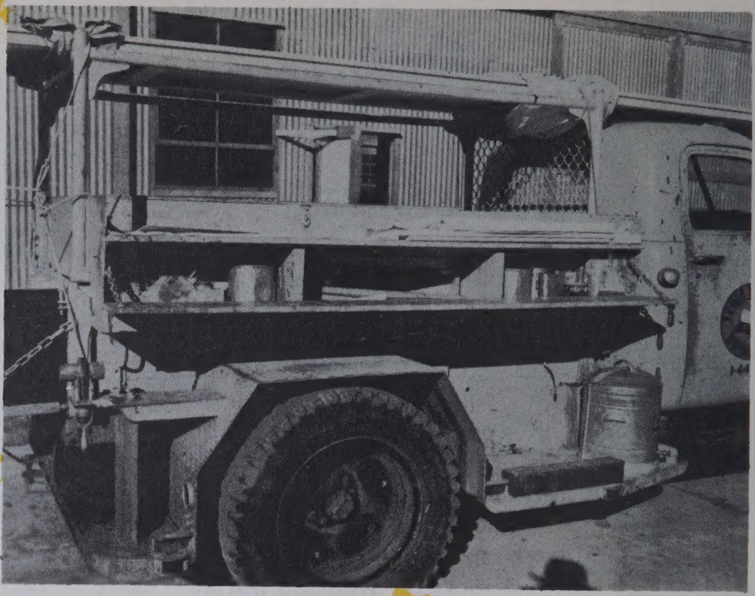
Beads are applied with bead-spreading machine.

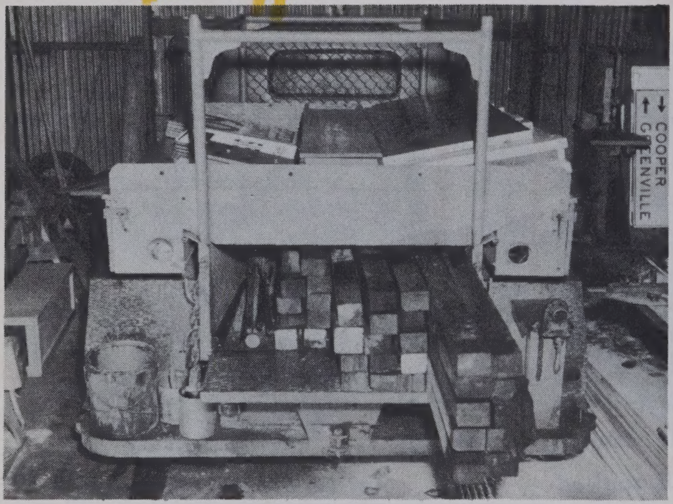
Sheet reflective material is applied to sign blank.

Letters are stenciled on sign.

Processed signs are stored in storage racks.

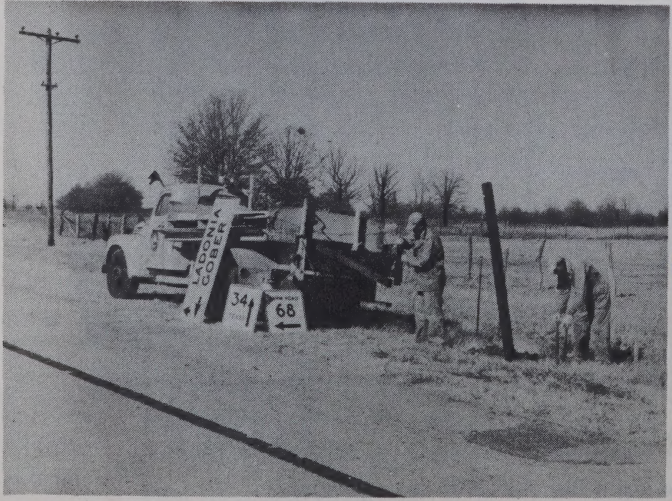
Sign truck, showing compartments for signs, paints, small tools, posts, and pipe vise mounted on truck.





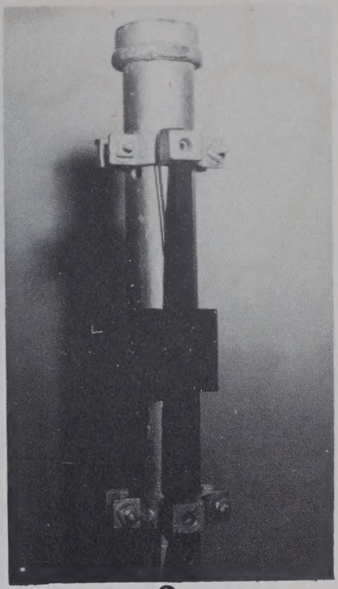
Sign truck has compartments for signs, posts, and miscellaneous material.

Setting stakes for sign posts.



Digging holes, setting posts, and drilling holes in post for sign installation.

1



2

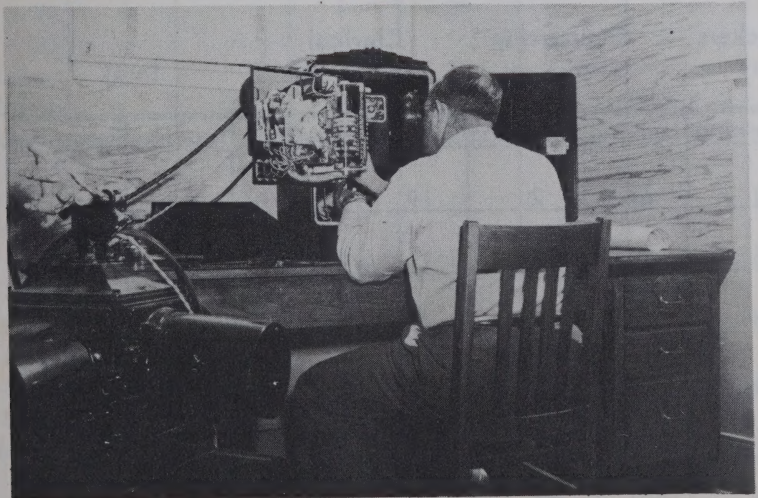
1 Nut is placed in sign clamp.

2 Close-up of shop-made holder for nuts, used for fastening sign to metal posts.

3 Replacing burned-out bulb in a flashing beacon.

4 Making adjustments on signal light controller.

3



4

Personnel

H.L. Arno, Director of Personnel

During the months of June, July, and August, 1952, the number of persons employed by the Highway Department topped the 10,000 mark. There were 10,038 regular employees in June, 10,110 in July, and 10,232 during August. This is the first time since August, 1939, that employment has exceeded 10,000. During August, 1939, there were 10,073 regular employees. Due to curtailment of construction and loss of personnel to the armed forces during World War II the employment figure dropped to 4,755 during December, 1944. Since that time to the present there has been a steady increase in the number of employees.

Employees who entered the armed forces to serve in the Korean War are now returning to the Department at a rate almost equal to the number leaving for the armed forces, and in the case of engineering personnel, the number returning exceeds the number leaving. During the first six months of the Korean War 218 employees were called and 5 returned, and during the six-month period ending December 31, 1952, there were 58 employees called to serve in the armed forces and 41 employees returned to the Department. During the past twelve months the number of engineering employees leaving was 30 while the number returning was 42.

NUMBER OF EMPLOYEES ENTERING THE ARMED FORCES
AND
NUMBER OF EMPLOYEES RETURNING TO THE DEPARTMENT

	Rodmen, Checkers and Laborers		Engineering Employees		Clerical Employees		Total	
Period	Leaving	Returning	Leaving	Returning	Leaving	Returning	Leaving	Returning
July 1950 Dec 1950	132	2	67	2	19	1	218	5
Jan 1951 June 1951	80	5	50	3	11	0	141	8
July 1951 Dec 1951	38	8	23	12	3	6	64	26
Jan 1952 June 1952	41	5	14	16	4	3	59	24
July 1952 Dec 1952	33	11	16	26	9	4	58	41
TOTAL	324	31	170	59	46	14	540	104

7-1-50 TO 12-31-52

	Rodman, Checker, Laborer		Engineering Employees		Clerical Employees		Total	
	Number Leaving	Number Re-appointed	Number Leaving	Number Re-appointed	Number Leaving	Number Re-appointed	Number Leaving	Number Re-appointed
Dist. 1	21	2	4	2	2		27	4
2	11	2	8	1	2		21	3
3	13		5	3			18	3
4	10		11	4	1	1	22	5
5	7		8	4	3		18	4
6	15	3	6	3			21	6
7	8	1	2				10	1
8	19	2	7	3	3	1	29	6
9	8		5				13	
10	12		2		1	1	15	1
11	5		2	1	1	1	8	2
12	15	1	10	2			25	3
13	14	1	9				23	1
14	4		6	4	1		11	4
15	21	3	7	3	1		29	6
16	15	2	5	1	1		21	3
17	9		2				11	
18	12	3	10	2	1	1	23	6
19	24	7	9	5			33	12
20	47	2	13	4	2	1	62	7
21	9	1	5	1			14	2
22	9		3	1			12	1
23	1		4	2			5	2
24	4		1	2*			5	2
25	6						6	
Ft. Worth Urban	1		3	2			4	2
Houston Urban	1	1	4				5	1
Dallas Urban	3		6	2			9	2
D- 4					3	1	3	1
D- 5			3				3	
D- 8					2	2	2	2
D- 9			3	1			3	1
D-10			6	5	8	2	14	7
D-11					1		1	
D-12					6	1	6	1
D-14			1	1			1	1
D-16					7	2	7	2
Totals	324	31	170	59	46	14	540	104

*One employee went to service from District 6.

Report On

Drilling Unit For Material Exploration

Hubert A. Henry, Geologist
Road Design Division

An article entitled "Drilling Unit For Material Exploration," was published in Construction and Maintenance Bulletin No. 8, September, 1951, which discussed the auger drill operated by the Equipment and Procurement Division. It was stated in the article that reports on the operation of this drill would be made in future bulletins. This report covers two major adaptations made for this unit which have proved successful.

This unit operates under a policy similar to the one which governs the operation of the core drills, but costs less than half as much. It augments the auger drills owned by several districts, and serves those districts which do not feel they can use such a drill on a full-time basis.

One adaptation for the rig makes it possible to use it to take "undisturbed" cores by the push-barrel method for triaxial testing. The drill has all the weight the core barrels can withstand, which is the limit for any equipment taking cores of this type. The only limitation this drill has which the larger ones do not have in this type of sampling is the maximum depth of twenty feet. As a part of this adaptation, a bit for cutting concrete was devised to take cores under existing pavement where study of subgrade conditions is desired.

The second adaptation for this unit is a bit which will cut eighteen-inch cores in solid materials, even hard rock. It is not practical to cut cores in extremely hard rock with the large bit because the harder materials require the teeth of a bit to be sharpened more often, and on a bit this size it takes considerable time. Each tooth has to be built up with an acetylene welding torch and a special preparation for hardening metals, which the drillers are equipped to do in the field when it is necessary.

The value of having eighteen-inch cores has been proved in several instances. When drilling with an eight-inch bit the material is so badly broken and pulverized it is often very difficult to determine exactly what the original material was, especially in borderline cases. If circulating water is used, all sand and clay seams are washed out, which fails to give a true picture of the strata by the log. If an eighteen-inch hole is drilled without circulating water, the cores can be measured as they are logged, and the hole also measured. This measurement is made to the inch and an exact description for that portion of the hole entered on the log. A core of this size provides a sufficient quantity of the material in its more natural state to be examined and described. Representative samples for laboratory testing can be determined and the desired quantity obtained. If the cores do not give a clear picture of the strata, it is possible for a man to go down in an eighteen-inch hole and examine the beds that are too deep to be seen from the surface.

Usually two or three large holes strategically located about an area will

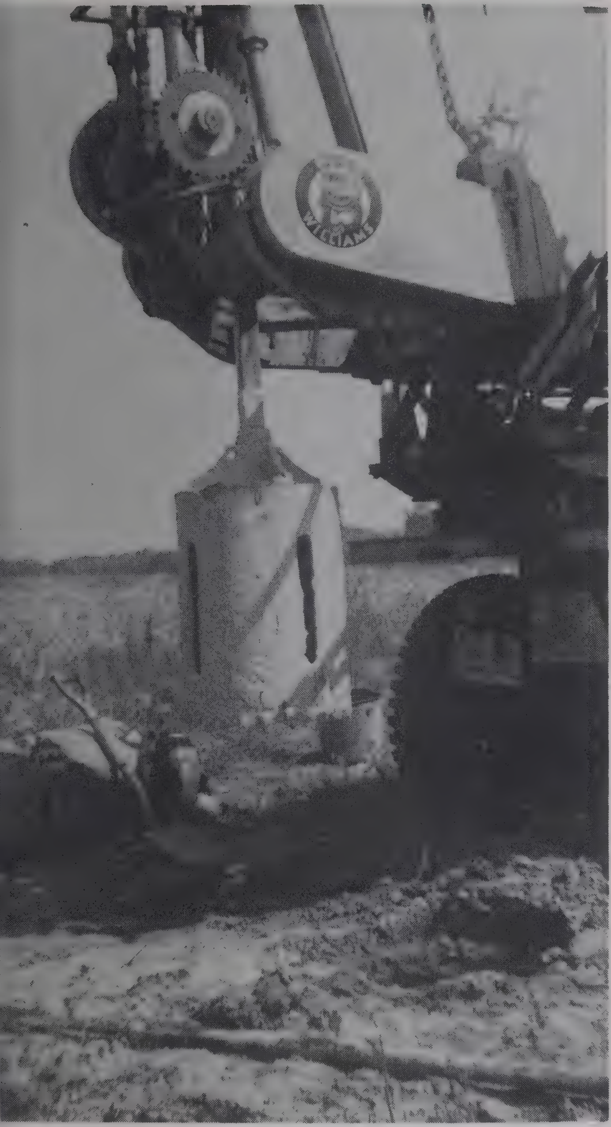


Figure 1

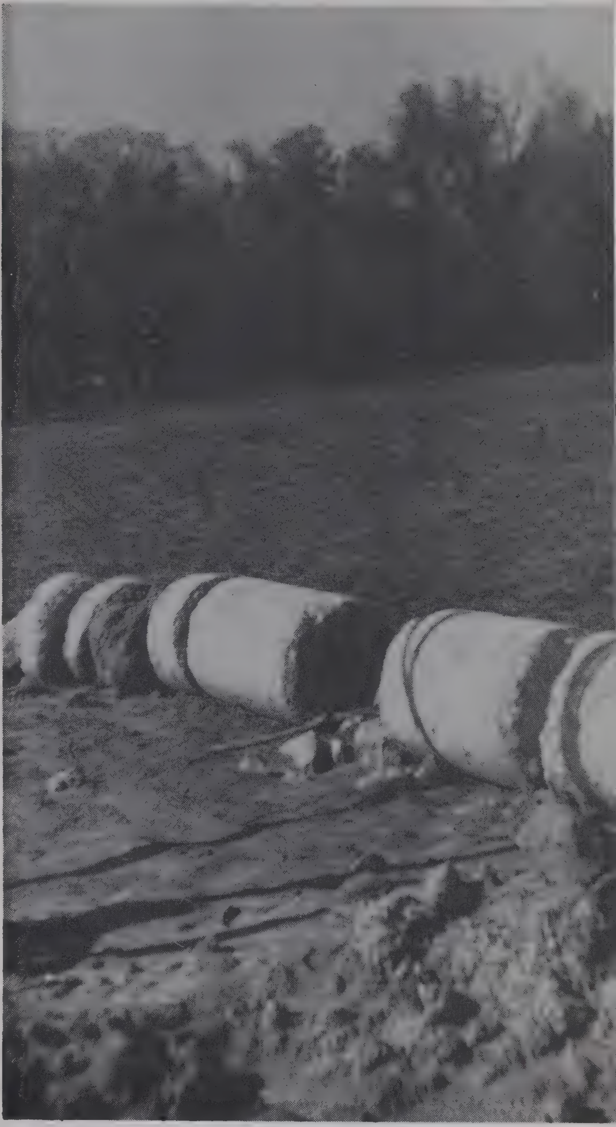


Figure 2

provide enough information so that correlation of small cores taken will establish the limits and quantity of material available. This correlation makes the interpretation of the small holes much easier and more accurate.

Figure one shows the large eighteen-inch bit, and figure two a limestone (Tehuacana) core cut with this bit. Figure three illustrates the degree to which a core cut in the same location with an eight-inch bit was broken. The boulders shown in figure four overlie the limestone strata. A small core would indicate this layer to be part of the usable material, however, because the boulders are interbedded in clay it will be necessary to remove them with the stripping, which is an expensive problem.

The core shown in figure five was cut with the eighteen-inch bit in soft sandstone, and represents twenty feet of strata.

Figure 3

Figure 4

Figure 5

Defensive Driving

Equipment and Procurement Division

Time was when we as drivers had to think only of ourselves, our equipment, our own driving technique. But that time has long since passed. Today if we want to save our own neck, we must be responsible for the same things in (1) the guy ahead, (2) the one behind, (3) the vehicle approaching, (4) the man pulling out from the side, and (5) the bird two miles down the road we will meet shortly.

Sometimes it's pretty tough trying to figure out what the other fellow wants to do. It's safe to assume this: He wants either all the road or a good portion of it. He wants to drive as fast as the law and conditions of the road allow. He wants to see around us and all the sights at the same time. He wants to keep rolling. Sometimes he wants to do all these things safely.

He may signal us, but we can't always depend on his muscular contortions. So we must figure his signal may mean anything from "left hand turn" to "boy, what a figure over there."

If he doesn't know how to drive, we do. Then we must show him by example how courtesy, consideration, and care can save a collision.

We as good drivers will accept the following as our "catechism" for good conduct on the highways:

1. Drive only at a speed consistent with road surface, traffic, and visibility.
2. Be particularly alert for pedestrians on the open road at and between intersections, as nearly half of all traffic fatalities involve people on foot.
3. Be prepared for the reckless driver who ignores traffic signals by slowing down at every intersection where vehicles are approaching or where vision is obscured.
4. When some driver insists upon "hogging" the right of way, let him take it.
5. When a driver attempts to pass and misjudges the space available or if a driver foolishly tries to pass on a hill or curve, drop back and let him into line.
6. If an approaching driver, in passing other cars, has difficulty in getting back into his own lane, slow down for him.
7. If the driver behind is over-anxious to get around your vehicle, pull over and let him pass.
8. Keep your temper at all times--you cannot be angry and be a safe driver at the same time.

A good driver is always ready to prevent an accident by courteous and generous action when the other fellow has made a mistake. He is patient and arrives safely at his destination because he is willing to give way to arrogant, aggressive, and careless drivers. He is always willing to pay for his own protection and the protection of others by his unselfish attitude and consideration for the thoughtless acts of others.

A good driver is one who drives carefully under all conditions. An excellent driver is one who give thought to emergencies in advance--and then meets them correctly.

Good driving is also good old age insurance.

Texas Wild Flower Trail

John C. Blasingame, Senior Landscape Adviser

This report is submitted as one possible solution to the many requests received to put on wild flower shows. From an economic standpoint, the following would seem to be a desirable substitute.

In the spring of 1952, the writer laid out a "Bluebonnet Trail" for the Ennis Garden Club. This trail was composed of three loops, a total of approximately 44 miles, with Ennis at the center. The Garden Club set up a reception center and information booth on Main Street in the business section of the city. This center served as headquarters to greet and register the visitors and furnish maps of the trail. They also erected directional arrow signs along the three loops. All this, of course, was free.

The eastern half of Ellis County abounds with bluebonnets. There are many hillsides which are covered with hundreds of acres of unbroken stretches of these flowers. These great masses of blue, sprinkled with patches of red Indian paintbrush and white and pink evening primroses, made the landscape very beautiful in the early spring. Ennis is centrally located in this area.

During the two weeks the trail was open, approximately 5,000 visitors registered at the reception center. Most of these were from Dallas. However, twelve states, Canada, and Mexico were represented. Countless hundreds drove over the trail who did not register. Most of the out-of-staters said it was the first time they had seen bluebonnets. Many requests were received for post cards, souvenirs, and extra maps of the trail.

It was estimated that 4,000 cars drove 100 miles each to cover this wild flower trail. This adds up to close to half a million miles of travel. The decision to put on this trail was delayed too late and as a result it wasn't properly publicized, especially in Dallas and Fort Worth. The number of cars would have been multiplied many times had the publicity been taken care of. As an example of the drawing power of this type attraction, the "Dogwood Trail" at Palestine was traveled by more than 100,000 cars. This number of cars adds up to an enormous amount of mileage and pays off the Highway Department in gas tax.

The Mayor, by proclamation, set aside two days as "Bluebonnet Festival Time" and asked that every courtesy be shown the visitors. For the many photographers, both amateur and professional, who attended, a group of beautiful girls were available as models. One camera club from

Dallas sent down ten members who really had a field day. The Ennis country club was on one of these loops and advertised lunch and cold drinks. They sold out long before customers quit coming. The filling stations and cafes also reported an increase in business.

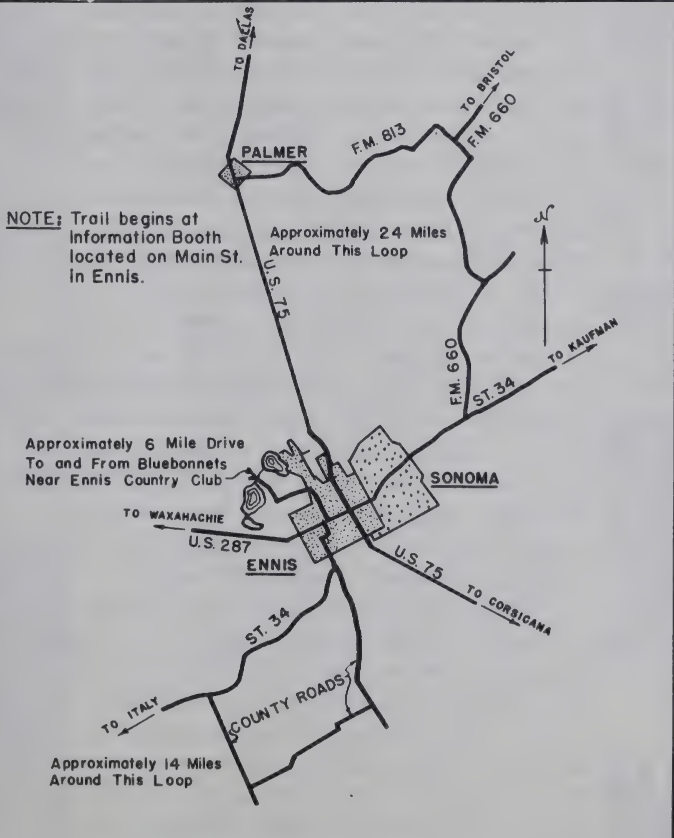
Most families enjoy a drive on a warm spring afternoon, but do not know where to go. By furnishing a route that leads to a beautiful display such as that of the "Ennis Bluebonnet Trail," the Highway Department could develop much good will and reap the profit from gas tax.

It is important in laying out a wild flower trail to avoid any highways that might develop into a bottleneck. Most of the cars will be on the trail from about 1 P. M. to 5 P. M. Nothing will kill a project of this kind as quickly as letting a traffic jam develop to worry sightseers. One of the big advantages of a trail of this kind is that people can be spread over many miles of highway.

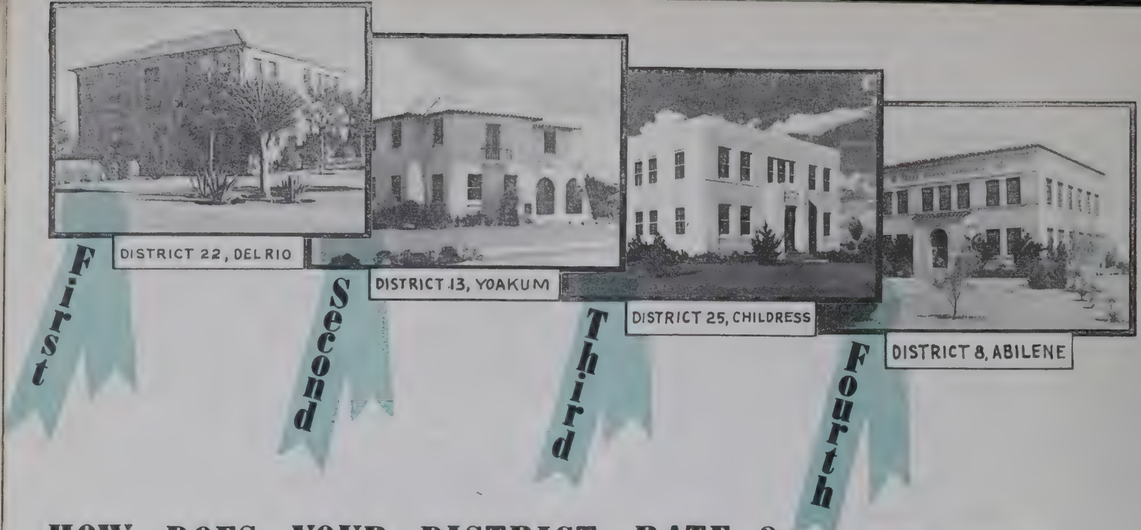
A booth with a labeled sample of each variety of flower to be found in bloom on the trail would prove a popular attraction. This would cost very little to set up.

The Texas Garden Clubs all make several pilgrimages as a part of their yearly program and they would probably cooperate in every way to promote trails of this nature. They might be interested in publishing a map of the state showing each of the organized or registered trails with the dates to see them and the name of the local organization to write for information.

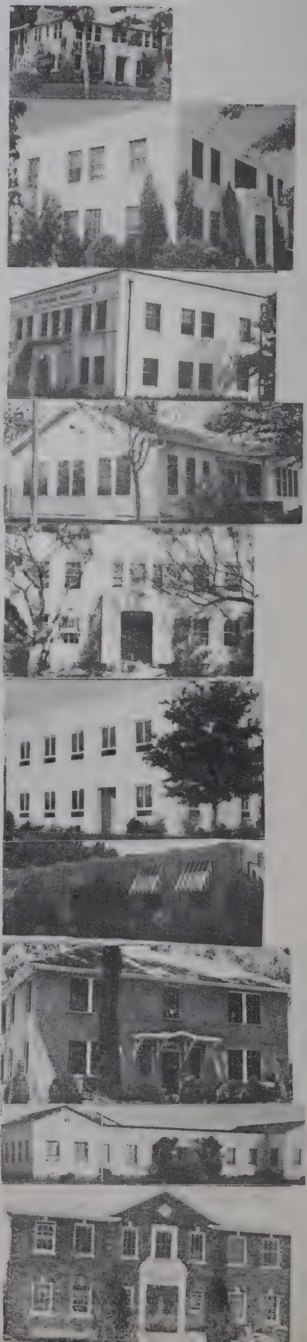
Every county in Texas could have such a trail at some time of the year.


TO DALLAS
TO BRISTOL
F.M. 660
F.M. 813
PALMER
NOTE: Trail begins at Information Booth located on Main St. in Ennis.
Approximately 24 Miles Around This Loop
U.S. 75
N
F.M. 660
ST. 34
TO KAUFMAN
Approximately 6 Mile Drive To and From Bluebonnets Near Ennis Country Club
SONOMA
TO WAXAHACHIE
U.S. 287
ENNIS
U.S. 75
TO CORSICANA
ST. 34
COUNTY ROADS
TO ITALY
Approximately 14 Miles Around This Loop

BLUEBONNET TRAIL
ENNIS, TEXAS



HOW DOES YOUR DISTRICT RATE ?



The Construction and Maintenance Bulletin had its inception in July, 1950. Its purpose was to serve as a medium for exchanging practical and technical information among State Highway Department personnel. In a state the size of Texas, it is impossible for employees to visit the numerous districts and personally observe and exchange ideas. Consequently, through the Construction and Maintenance Bulletin, we hope to maintain a higher degree of efficiency and benefit from the knowledge and experience of our fellow workers. In our opinion the Construction and Maintenance Bulletin is one of the most practical and economical ways in which this information can be exchanged. Your wholehearted support of this publication has been exceeded only by your cooperative spirit. The material received from the field is the very backbone of the Bulletin, and upon these contributions hinges the future of this medium of exchanging ideas and information.

The information submitted clearly indicates outstanding initiative and ingenuity among individuals and Districts alike. However, the future success of the Construction and Maintenance Bulletin will depend largely upon the Districts' ability to supply material. We should be on the lookout continually for ideas and news stories that would be of value or interest to Construction and Maintenance Bulletin

readers. We should search among all levels and phases of highway work for material and items of interest. We should give the individual credit for an idea or the employee who prepares or suggests an article. We should give credit where credit is due to stimulate individual interest.

The continued success of the Construction and Maintenance Bulletin will definitely depend upon the ability of the Districts to kindle interest and instill an incentive among the employees to submit individual thoughts and ideas. The District Reporter should have the assistance and cooperation of all within the District. Any newsworthy item, regardless of its significance, should be brought to the reporter's attention for submission. A simple method of making or increasing the usefulness of an ordinary maintenance tool might save the Department valuable time and money if made known to others. We learn from experience. There are experiments conducted daily and conclusions reached in various phases of highway work which would not only be of interest, but would prove profitable, if made known to other employees.

We feel that possibly the Bulletin does not receive a wide enough distribution among the field forces. Construction and Maintenance Bulletin is a departmental publication, designed for layman and technician alike, and should be made available to any employee who is interested in, or would benefit from, the material contained in these publications. It is only logical that as the circulation increases, so will the volume of contributions from readers. In addition, a greater cross section of thoughts and ideas should be available.

The efforts of and splendid response received from the Field and the Austin Office alike towards improving the Construction and Maintenance Bulletin have been most commendable. During this coming year, as a result of past experience and with the appointment of District Reporters, a still greater volume of material should be available. Any suggestions or comments relative to any phase of the Construction and Maintenance Bulletin will always be most welcome and appreciated.

Listed below is a breakdown of the volume material received from the various Districts during the period of publication:

DISTRICT	NO. OF ARTICLES	DISTRICT	NO. OF ARTICLES
22	16	11	5
13	11	18	5
25	10	23	5
8	9	6	4
2	8	7	4
14	8	1	3
15	8	9	3
20	8	19	3
24	7	21	3
4	6	3	2
12	6	16	2
5	5	17	1
10	5		

Have you been aggressive or have you just neglected to share your ideas with others through the Construction and Maintenance Bulletin?

Roadside Parks Off the Assembly Line

Paul H. Coleman, Assistant District Engineer
District 6

District 6 reports on using the precast fixtures for roadside parks described in Bulletin No. 12.

Due to the critical personnel shortage and the scarcity of local stone suitable for masonry work, our 1952 Roadside Development Program was progressing very slowly. After reading the article "Setting Up Roadside Parks" in Construction and Maintenance Bulletin No. 12, we decided to precast all roadside park fixtures in an effort to expedite this work.

The table and benches developed by District 14 are being used, and we have designed a precast fireplace, incinerator, and arbor column. These fixtures are cast at a central location and then hauled to the park sites. The final finishing is delayed until after the fixtures have been assembled so that the damage incurred in transporting and handling can be patched and finished in one operation. The columns, table legs, bench legs, and bottom portions of the incinerator and fireplace are painted brick red. This contrast in color catches the eye of the motorist and adds a good deal to the appearance of the park.

The approximate costs of these fixtures in the stockpile are fireplace, $85; incinerator, $75; and arbor column, $18.

Six men with a winch truck can set up two arbor units complete with tables, benches, incinerators, and fireplaces in one day. This does not include the thatching of the arbor roofs. Two men can complete the final finishing, patching, and painting of these two arbor units and fixtures in one day.

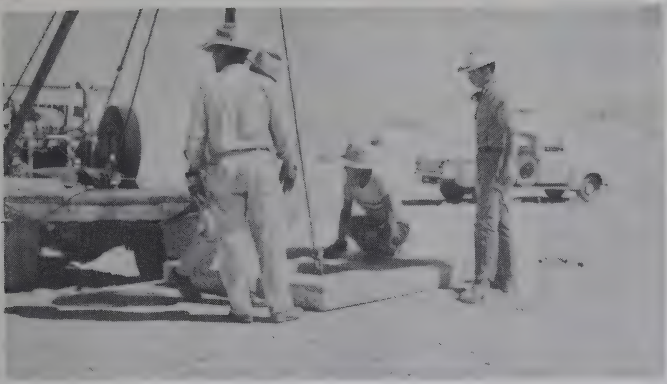
The use of these precast fixtures has proved to be both economical and practical. They are not difficult to construct and install, and any portion of the table, benches, or fireplace that is damaged or broken can be easily replaced. We have completed one new park with precast fixtures and have not received any adverse criticism of this type of installation.

The pictures shown were taken at a new park in the sand dune area about ten miles northeast of Kermit.

R. L. Faltinson reports that an arbor having columns with a 13-inch base and 11-inch top has been completed. Several photographs have been taken of this arbor, and we think that it has a neat, well-porportioned appearance.

"There is one danger involved in handling the 13-inch by 11-inch column. A strong wind and/or slightly uneven ground will cause this column to fall over. It should not be left unsupported while in an upright position prior to placing on its final footing.

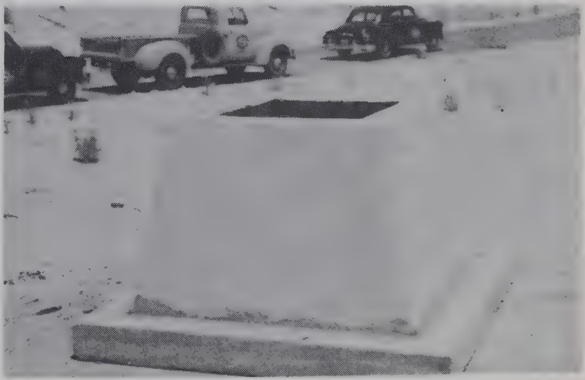
"The more we use these precast roadside park facilities, the better we like them."



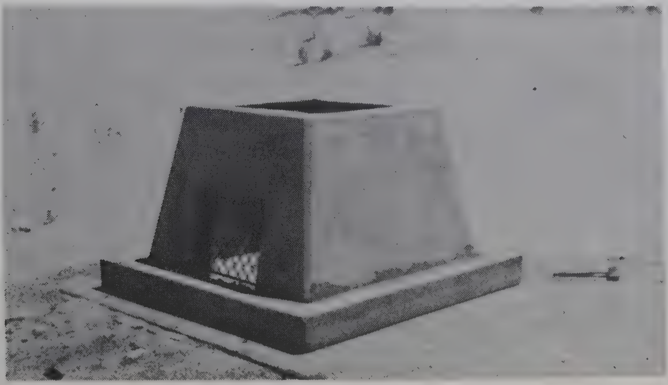
Placing incinerator slab.

Slab for Incinerator – Opening in slab placed over eighteen – inch diameter by twenty-foot depth. Drilled hole for trash disposal.

Placing incinerator.

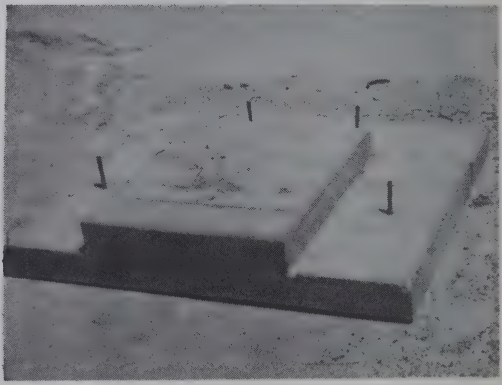


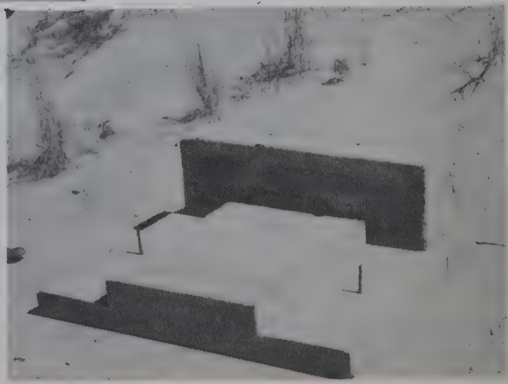
Side and back view of incinerator.

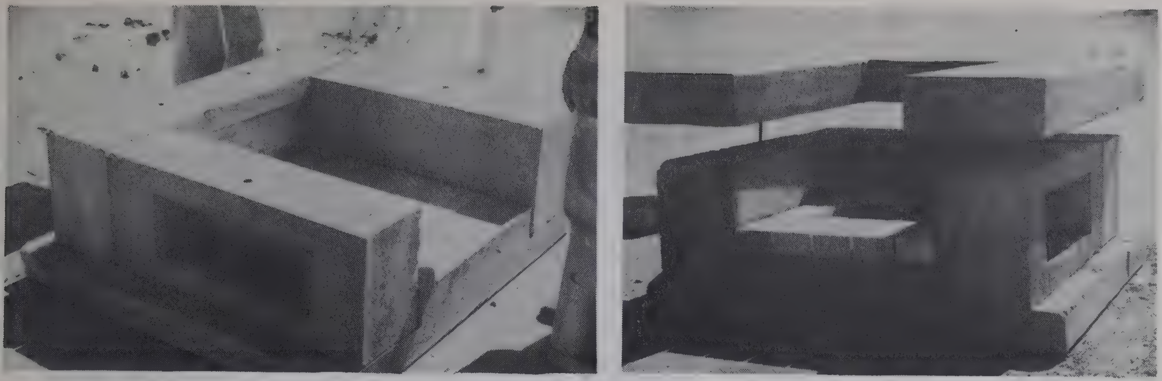


Front view of incinerator.

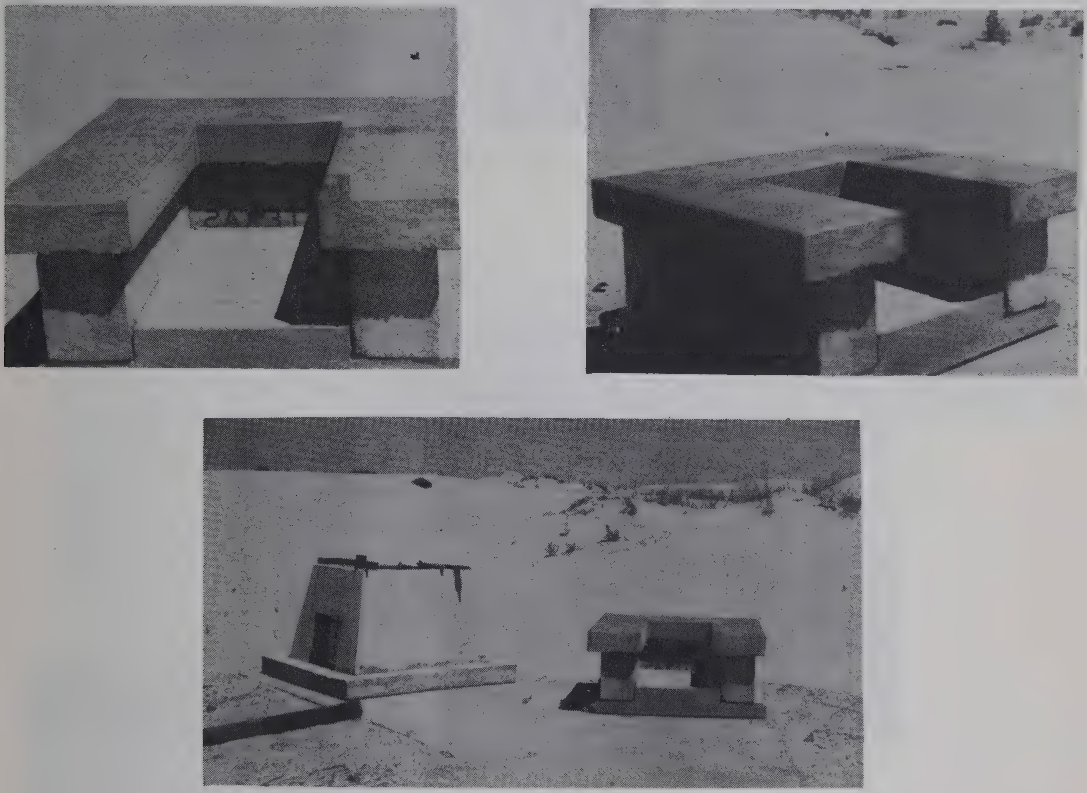
Views Showing Assembling of Fireplace







Assembling fireplace –

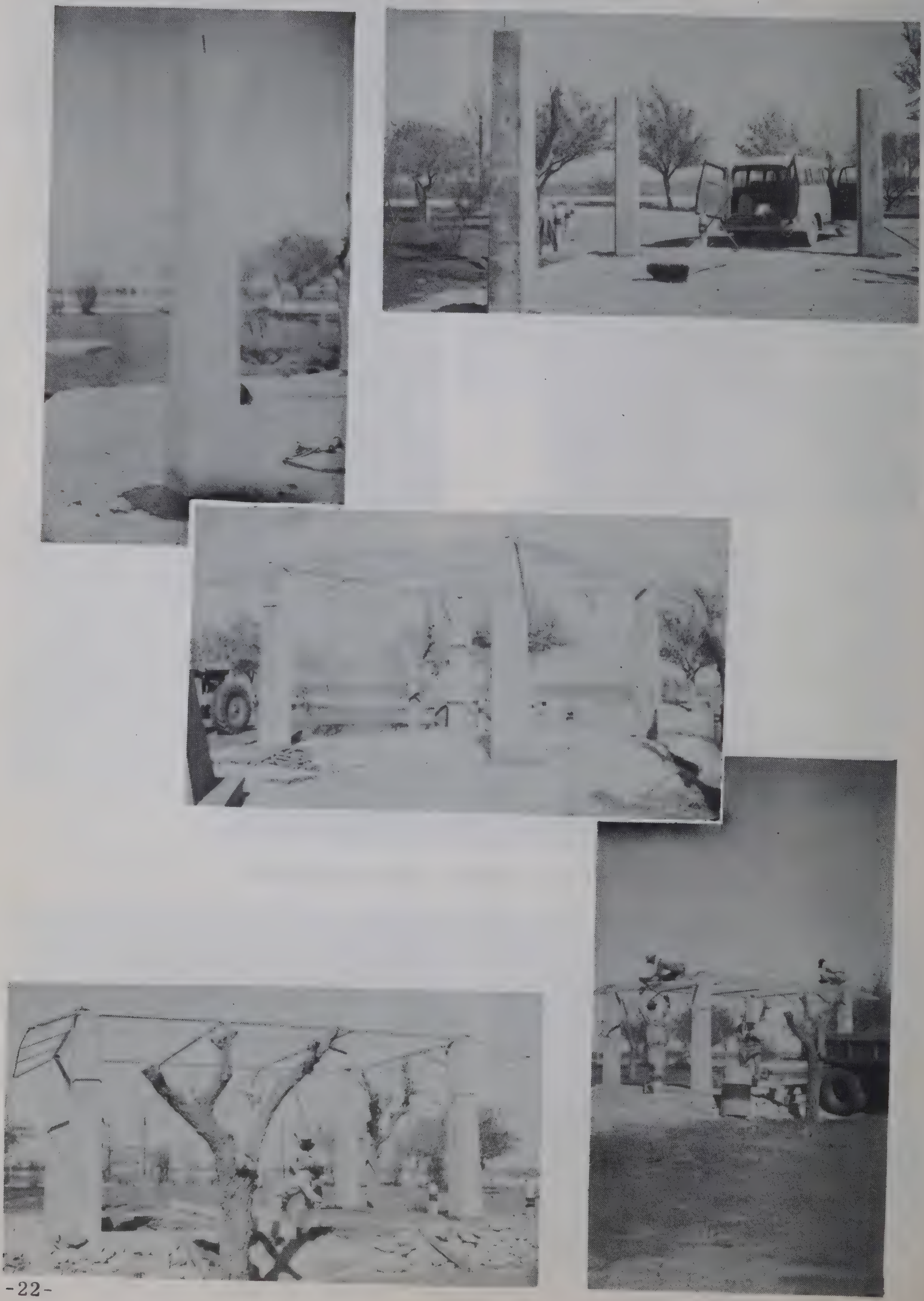


The above views show partially completed fireplace.

Fixtures after final finish and painting.

Partially completed arbor unit, fireplace, and incinerator.

Partially completed arbor using columns with 13-inch base and 11-inch top.



Partially completed arbor using columns with 13-inch base and 11-inch top.

Completed arbor using columns with 13-inch base and 11-inch top.

Automatic TRAFFIC RECORDERS

Joe Wright, Traffic Survey Manager
Highway Planning Survey Division

Prior to 1936, very little data was available as to the volume and classification of traffic on our highways. Any information available was obtained from short-period manual counts made by district personnel at specific locations as needed. The traffic volumes obtained were for just the period counted and no means or methods were available to analyze the data on an annual basis.

In 1936, the Traffic Section of the Highway Planning Survey assumed the responsibility of gathering, analyzing, and presenting current traffic data. The purpose of these continuing traffic surveys was to furnish comprehensive information for sound planning to serve the traffic needs. In addition to the use of traffic data for the broad planning of a highway system, there were many specific problems which demanded an accurate estimate of traffic density and characteristics.

The first use of automatic traffic recorders was to obtain control information for manual counts. Twenty photoelectric type recorders, purchased from the IBM Corporation, were installed at representative locations over the state. These machines furnished hourly volumes for each day of the year. From these records, factors were developed to expand counts of less than 24 hours duration to a full 24-hour period, and to adjust for seasonal variations. These permanent machines also furnished reliable data relative to variations in traffic volumes annually and the relation of weekday, Saturday, and Sunday traffic volumes.

One of the original IBM Photoelectric recorders.

Battery operated photoelectric portable traffic recorder, designed and built by Highway Planning Survey in 1939.

The expanding highway system and the increased demand for traffic data have made it necessary to greatly expand the operations of the Traffic Section. Due to the cost of manual counts, it was necessary to do as much work as possible with automatic recorders. The only automatic traffic recorder available at that time was the IBM photoelectric recorder. This recorder required 100 volt alternating current for operation and was complicated in design. Maintenance was expensive. These recorders cost $500 each in 1936.

Of necessity came the invention. The need for more automatic recorders, and especially a portable machine that could be moved from day to day, started the research and experimentation which led to the present day "home made" traffic recorders.

Before discussing the design, construction, and maintenance of these recorders, it might be well to evaluate some of the conditions which brought about the need for more data and what is done with this data.

In 1940 there were approximately 23, 000 miles of state-maintained highways which required 2, 500 traffic counts per year. Today, there are approximately 41, 500 miles of state-maintained highways which require 13, 600 traffic counts per year. This information is presented annually by, (1) A State Traffic Map showing annual average daily traffic volumes on all highways other than farm to market roads, and (2) District Traffic Maps showing annual average daily traffic volumes on all highways and farm to market roads in the entire state system.

County Traffic Maps are prepared each three to four years and show annual average daily traffic volumes on all roads, both state and county, within each county. Approximately 43, 000 24-hour counts are required to complete the county road survey. The actual number of counts per county vary from 22 in Loving County to 1, 147 in Dallas County. These counts are obtained by men with 35 cumulative recorders each who move these machines to new locations after each 24 - hour operation. Counties are scouted as a preliminary operation to determine the proper locations for the recorders, with relation to heavier volume roads, new roads, and any changes in physical conditions which might affect the traffic pattern. One to two hourly recording machines are set on representative roads for the duration of the survey in each county to furnish control information on variations of weekday traffic and the relation of weekday traffic to week-end traffic. Permanent automatic recorders in the area are used for seasonal control data. With these two controls, annual average daily traffic can be determined for each individual road section.

To be able to accomplish the program previously described, there are now 118 hourly recording traffic recorders permanently installed at representative locations on county roads, farm to market roads, primary and secondary highways and urban expressways. In addition to these permanent machines, 40 portable hourly recording units and 425 portable 24-hour cumulative recorders are now in use.

The beginning of the "machine age" was marked by the twenty IBM photoelectric recorders purchased in 1936. In 1938 work was started on a portable battery-operated photoelectric recorder. Twenty of these machines were designed and constructed at Camp Hubbard by Planning Survey Personnel and were put in service as both permanent and portable units in 1939.

The demand for more data and increased coverage to include county road surveys made evident the need of a greater number of automatic recorders. From this need was born the "ACR, " or Automatic Cumulative Recorder. These machines, small enough that 30 to 40 units can be carried in the trunk of a standard passenger car, operate on an air impulse received from rubber tubing stretched across the roadway. This principle is now in use on all portable machines and at all permanent locations except some twelve installations where the old IBM photoelectric principle is still in use. Even in these photoelectric units, the recording instruments developed by the Planning Survey have replaced the complicated recording mechanism of the commercial machines. The photoelectric machines have proved their advantage where snow removal is a problem.

As new units have been constructed, many changes have been made. The major aim has been to simplify the machines in every way possible. This simplification was dual in purpose; first to lower the cost of construction and maintenance, and second, to simplify the actual operation of servicing the units.

The experimental work, design, redesign, and field experience has produced an inexpensive automatic traffic recorder that can be operated and serviced with little technical background and limited experience.

The Automatic Cumulative Recorder is the work horse of all. This unit, weighing only seven and one-half pounds, is housed in a metal box four inches by six inches by nine and one-half inches. The machine consists of a metal diaphragm air switch which receives an air impulse from each axle of a vehicle crossing the rubber tubing stretched across the roadway. The contact points on the air switch when closed actuate a relay which in turn actuates the counter mechanism. Power comes from a 45 volt "B" battery housed in the unit. In the battery circuit is a Baby Ben clock modified to serve as a 24-hour cut-off switch. This recorder can be set up and ready for operation in approximately ten minutes, and automatically stops counting 24 hours later. The counter reading when set up, subtracted from the reading at the end of the 24-hour period, reveals the total number of axles crossing the tubing.

The hourly recording machines use the identical counting mechanism with the addition of a device for recording the counter reading each hour. These machines are used for both permanent locations and for portable use.

The cost of construction of the road strip, less belting, is approximately 60 cents per linear foot. Belting costs 70 cents per foot.

A shop is maintained at Camp Hubbard where all construction and major maintenance is performed. This shop has grown from a two-man work bench to a room with 800 square feet, containing work area for up to seven technicians. Equipment includes welding apparatus, lathe, drill press, and such small tools as are necessary.

Major parts, such as clocks, counters, relays, condensers, light bulbs, locks, and wiring are purchased as needed. All other parts used in the recorders are made and assembled in the shop. A sufficient stock of parts is maintained to furnish field men with spare parts for minor maintenance, and to equip the shop for major maintenance and overhaul.

The 35 mm film used for recording hourly totals is purchased in bulk lots, and cartridges are loaded as needed in the shop dark room. Film is developed by the Reproduction Division.

Permanent installations are serviced weekly (every Monday) by district personnel, usually maintenance foremen. These "caretakers" remove and replace film, wind the clock, and check for operation each week. Monthly service and routine maintenance is handled by Austin Personnel, who also make special trips for repair of recorders when notified of troubles by the caretakers. Excellent cooperation has been received from all districts in both the installation and maintenance of these permanent recorders.

Manual counts are still necessary but only for classification of vehicle types at representative locations.

One of the major difficulties of the original IBM recorder was the complicated printing mechanism for recording hourly totals. To simplify this procedure, both in cost and operation, a camera using 35 mm film was designed and is used to record the counter reading. The recording mechanism, or instrument box as it is called, consists of an eight-day clock, counter unit, and a camera for recording hourly totals. The camera is prefocused and set in one end of a "dark tunnel" with the counter unit facing the camera at the other end of the tunnel. A Seth Thomas eight-day clock is geared to the winding spool in the camera and rolls the film about one-fourth inch per hour. This places an unexposed section of film in the proper position for the recording each hour. A six-volt electrical circuit which is closed for approximately fourteen seconds each hour is wired through the clock. When this circuit is closed, a three candle power light bulb in the dark tunnel is "on." The clock furnishes power to wind the film and control the exposure light for one week's operation. Thus, this unit can be set up as a permanent installation and serviced once a week, or may be used as a portable recorder for any period of time that hourly traffic volumes are desired.

Both the cumulative and hourly recorders, when used as portable counters, and actuated by a rubber tube stretched across the roadway and held by clamps nailed to the pavement or shoulder of the road. The recorder box is chained to a guard post or other stationary object. Normally, a 10 per cent stretch is used when installing the tubing. The only adjustments necessary for the cumulative recorder are the contact points on the air switch, which are varied for different width roads. The air impulse decreases as the length of tubing used increases, and requires a closer setting of the points on the longer setups.

The setup of the hourly recorder requires the same point adjustments as the cumulative recorder, as well as setting and winding the clock and installing film. This machine can be installed in approximately twenty minutes.

Permanent installations are made with the hourly recording machine but are housed in a larger box bolted to a concrete block on the shoulder of the road. The tubing for these installations is enclosed in a "road strip," designed and made in the Camp Hubbard shop. This strip is constructed on twenty-gauge metal reinforced with one-fourth-inch round steel on the under side. A channel is rolled into the strip for the tubing, and crimps are bent on each side to hold three-ply, four-inch rubber belting in place over the tubing. These strips are fastened to asphalt roads by drive-in pins, and to concrete by bolts and expansion shields. Rubber joint filler is used under the strip to serve as both a cushion and moisture seal. A thin ramp or approach of premix asphaltic material is placed on each side of the road strip after it is fastened in place. On new concrete roads where installations are to be made, a three-eighths-inch-depth by six-inch-width groove is formed in the surface at the time of construction. This allows the road strip to be flush with the surface, with only the belting protruding enough to obtain an impulse from the wheels of the passing vehicle. These grooves have been sawed and chipped into some concrete installations previously constructed and have been formed into some asphaltic concrete resurface jobs. Having the road strip flush with the surface of the roadway eliminates the possiblity of the strip being pulled loose and adds to the over-all life of the installation.

Records indicate that the average life of the metal part of the road strip is approximately three years and 1,700,000 vehicles, the life of the belting is approximately two and one-half years and 1,400,000 vehicles.

Vehicle classification is necessary to

obtain commercial percentages, and is also used to develop axle factors for the conversion of the axle count of the automatic recorder to actual vehicles. These factors vary from .46 to .50, dependent on the relative number of multiple axle vehicles on different highways.

An eight-hour manual count costs approximately $25. The average 24-hour automatic recorder count costs approximately $1.60. The cost of the shop-constructed cumulative recorder is $45 per unit. There is no comparable unit on the market. The hourly recording machine costs $160 to build as compared to $305 for a commercially-built machine to do the same job.

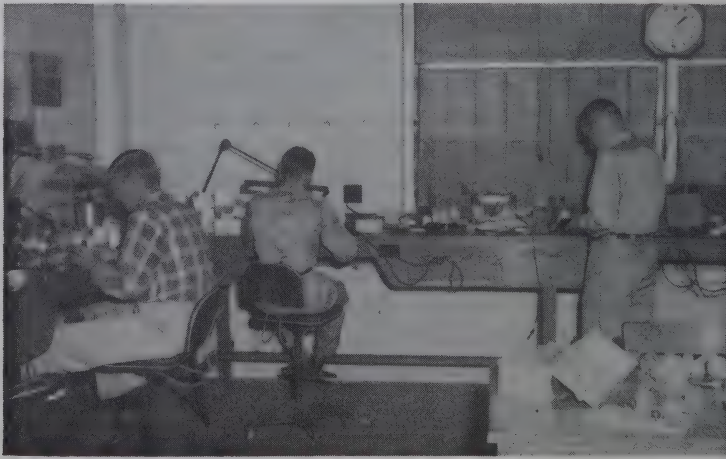
Operating efficiency of the 116 automatic recorders at permanent locations during 1951 was 95.8 per cent.

Specifications of these recorders have been requested by many other states and by several foreign countries. Several states have borrowed sample machines to aid them in construction of similar recorders. Yale University and Texas A & M College use these recorders in their highway engineering courses.

Cumulative recorder installation.

Automatic cumulative traffic recorder.

Automatic cumulative recorder installation.



Camp Hubbard Shop – At left, W.H. Peterson, Technician, works on clock repair and conversion. At center is Technician Ray Brown, and right is J.L. Berkman, Shop Supervisor.

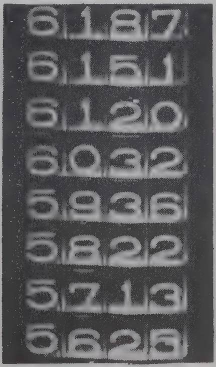
W. H. Peterson installing hourly traffic recorder.

Permanent installation of hourly recording machine.

Road strip preformed into concrete pavement for permanent installation.

J. H. Berkman installs film in instrument box for an hourly recording unit.

Mrs. Anna Murchison, Highway Planning Survey analyst, "reading" film from permanently installed recorders.



Film from hourly recording machine.

Repairs To Concrete Girder Bridges

Lawson Chambless, Concrete Foreman
I.H. Crutcher Jr., District Maintenance Engineer
District 10

We have recently completed the installation of expansion devices on five concrete girder bridges, Type G-2-27, on U.S. 80 in Wood County. Three of these bridges, at Lake Fork Creek east of Mineola, were constructed in 1938. The other two, at the Sabine River west of Mineola, were constructed in 1942. We first noticed the end of an exterior girder sheared off on one end of the Lake Fork Bridges in 1945. Further inspection disclosed a number of interior girders in the same condition. Possibly this condition had developed earlier than we discovered it, since it would not be noticeable from casual inspection on an interior girder. After discovering the trouble on the Lake Fork bridges, an inspection of the Sabine River bridges disclosed several sheared girder ends there too, only three years after construction.

The failures were caused by freezing of the upper and lower expansion plates, preventing them from sliding with expansion and contraction as anticipated. The upper bearing plate has a four-inch stud embedded in the girder end. Reinforcing steel in the girder extends to about the point where the stud is located in the girder. With the bearing plates frozen, the force of contraction sheared a wedge-shaped section from the end of the girder.

Temporary repairs were made by installing a section of I-beam across the cap parallel to and on each side of every damaged girder and shimming up against the diaphragm wall, transferring the load from the girder to the diaphragm wall. As a temporary expedient, this was satisfactory. However, since this made no provision for movement during contraction and expansion, some of the diaphragm walls finally shattered directly above the I-beam blocking.

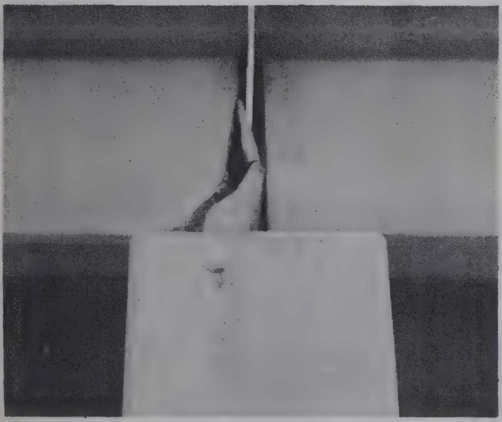
New expansion devices of two types were designed for us by D-3. Where the diaphragm wall was shattered, a saddle device was used which was constructed of two I-beams placed across the cap with the ends of abutting girders of adjacent spans resting in the saddle. This device allows the girder to carry the load. A thin piece of galvanized metal between the bottom of the girder and the cross member of the saddle allows the girder to slide with expansion and contraction.

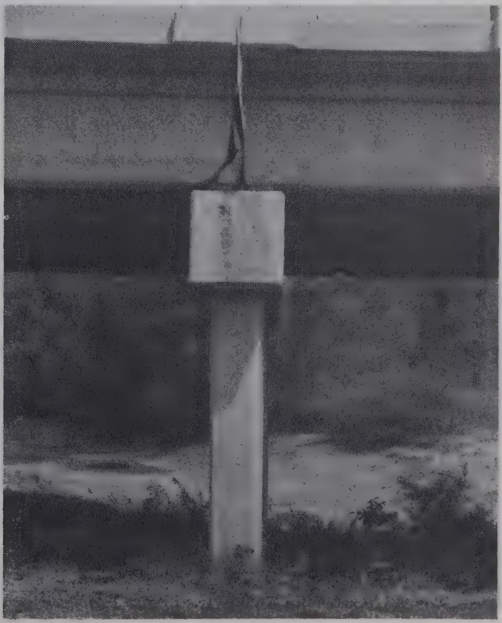
Where the diaphragm walls were not damaged, a saddle device placed longitudinally under the diaphragm wall was used. This saddle was mounted on a pipe roller filled with concrete, and the roller rested on a plate supported by I-beams on the cap.

In the five bridges we used 239 roller devices and 30 of the I-beam saddle devices. Total cost of the installations was $12,041.78. Of this $4,047.96 was cost of labor for installing the units and $7,993.82 was cost of material, which included cost of the completed expansion devices. These devices were made in our own shop at an average cost of $27.16 each.

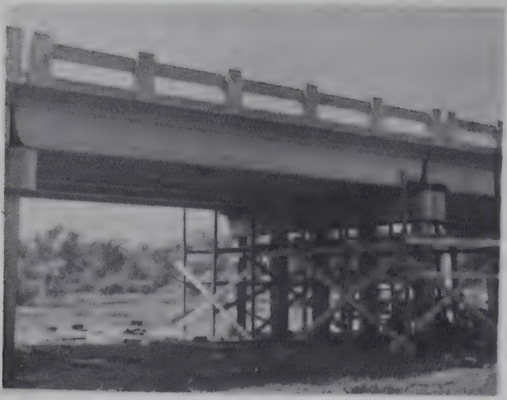
We would like to add that salt had been used extensively for ice removal on these bridges. This quite probably hastened the freezing of the expansion plates, which were badly corroded and rusted. A bridge of similar design built in 1942 at the Sabine River on State Highway 149 in Gregg County has had only three of these failures. After completion of the Wood County repairs, similar expansion devices were used on the three damaged girders in Gregg County. The remaining girders in this bridge were jacked up on the expansion ends, and the plates cleaned and lubricated.

This work was done under the supervision of Lawson Chambless, Construction Foreman, with technical advice furnished by F. G. Rankin, Assistant District Engineer.

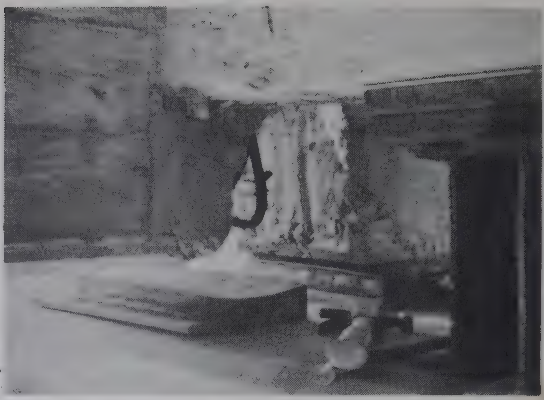




Typical sheared girder ends.

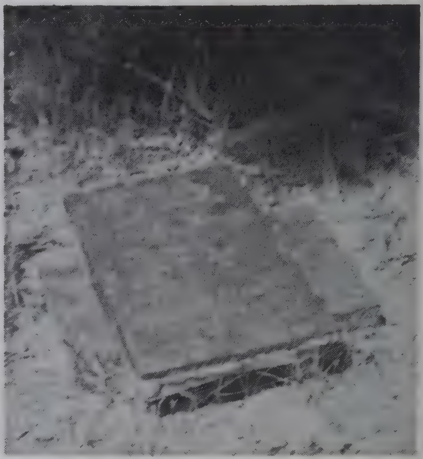


Girder sheared on both expansion and contraction ends.

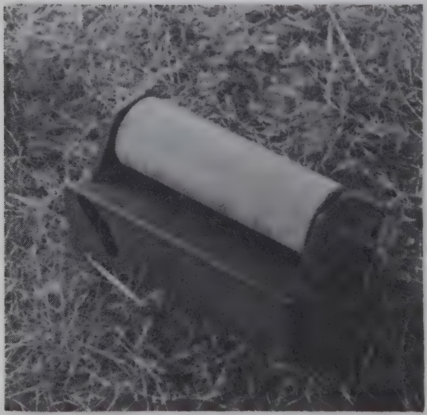


Close-up of sheared girder end.

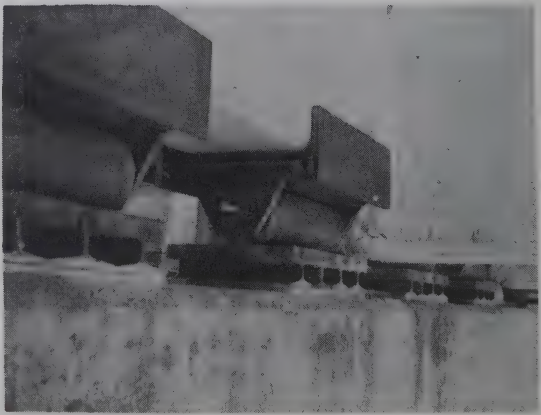
Temporary I-beam supports under diaphragm walls.



Expansion plate removed from bridge, showing rusted and eroded condition.



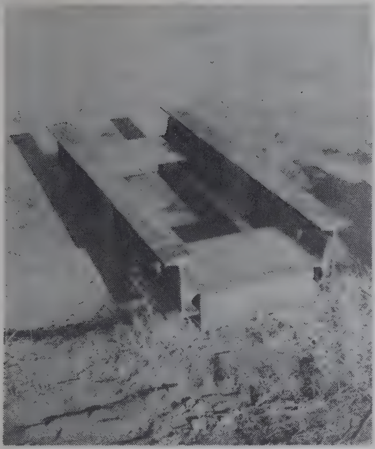
Roller used in one type of expansion device.



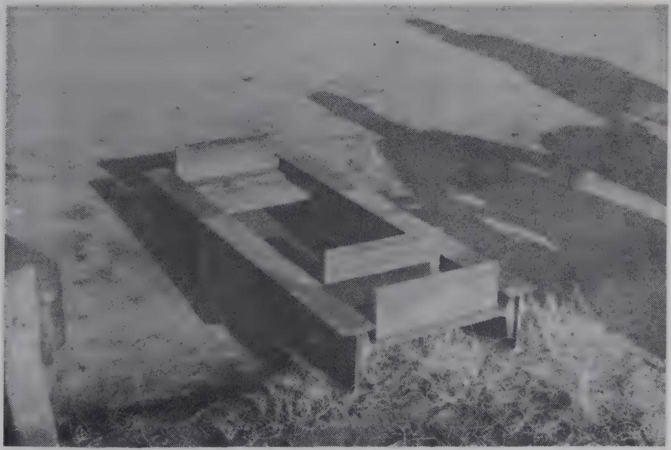
Roller expansion device in place before grouting with Embeco cement.

Roller expansion device after grouting.

I-beam saddle device, right side up.



I-beam saddle device, bottom side up.



Bent with I-beam saddle devices in place.

Bent with roller expansion devices in place.

GAUGE OF CYLINDRICAL TANKS
(IN HORIZONTAL POSITION)

% Depth Filled	% of Capacity	% Depth Filled	% of Capacity	% Depth Filled	% of Capacity	% Depth Filled	% of Capacity
1	0.20	26	20.73	51	51.27	76	81.50
2	0.50	27	21.86	52	52.55	77	82.60
3	0.90	28	23.00	53	53.81	78	83.68
4	1.34	29	24.07	54	55.08	79	84.74
5	1.87	30	25.31	55	56.34	80	85.77
6	2.45	31	26.48	56	57.60	81	86.77
7	3.07	32	27.66	57	58.86	82	87.76
8	3.74	33	28.84	58	60.11	83	88.73
9	4.45	34	30.03	59	61.36	84	89.68
10	5.20	35	31.19	60	62.61	85	90.60
11	5.98	36	32.44	61	63.86	86	91.50
12	6.80	37	33.66	62	65.10	87	92.36
13	7.64	38	34.90	63	66.34	88	93.20
14	8.50	39	36.14	64	67.56	89	94.02
15	9.40	40	37.39	65	68.81	90	94.80
16	10.32	41	38.64	66	69.97	91	95.55
17	11.27	42	39.89	67	71.16	92	96.26
18	12.24	43	41.14	68	72.34	93	96.93
19	13.23	44	42.40	69	73.52	94	97.55
20	14.23	45	43.66	70	74.69	95	98.13
21	15.26	46	44.92	71	75.93	96	98.66
22	16.32	47	46.19	72	77.00	97	99.10
23	17.40	48	47.45	73	78.14	98	99.50
24	18.50	49	48.73	74	79.27	99	99.80
25	19.61	50	50.00	75	80.39	100	100.00

$$\text{Full capacity of tank in U.S. gallons} = \frac{0.7854 \times D^2 \times L}{231}$$

D = inside diameter in inches and L = inside length in inches.

From the calculated capacity should be deducted the volume occupied by any piping and fittings.

This table is taken from the Asphalt Handbook, published by the Asphalt Institute. It is also often found in hydraulic handbooks. Quite often an engineer or maintenance foreman will find such a table valuable in measuring or strapping a tank. With a little simple arithmetic, this table can readily give the gallon capacity of a cylindrical tank in a horizontal position.

Submitted by Palmer Massey, District Engineer
District 25

SCHOOL on SIGNS SIGNALS and MARKINGS

R.Q. Spencer, Senior Maintenance Foreman
Maintenance Division

A school on Signs, Signals, and Markings was conducted in Austin January 6, 7, and 8. It was attended mainly by District Maintenance Engineers and Superintendents, District Traffic Engineers, and District personnel whose principal duty is supervision and construction of the signs, signals, and markings on our highways. Organized by J. A. Waller, Chief Engineer of Construction and Maintenance, the school was directed by Fred T. Bennett, Engineer, Traffic Services, and P. S. Bailey, Maintenance Engineer. Personnel of Traffic Services, Maintenance, Equipment and Procurement, and Materials and Tests Divisions provided instruction. Bailey served as chairman.

The school was held in the interest of improving uniformity and standards of signing and markings on our highways throughout the state. In opening remarks, D. C. Greer, State Highway Engineer, stated that he wanted the system of signs and markings on Texas highways to be the best in the nation, a distinction the state once held but which has been neglected in recent years. He urged free exchange of ideas and airing of problems by those attending to make the school instrumental in regaining leadership in the signing and marking field.

The decision to adopt standards raising the height of signs was an important feature of the school. Based on results of experimental installations in all Districts, a large majority favored the higher signs because they improved visibility in seasons when vegetation is heavy and reduced cleaning problems. As a result of these experimental installations, the decision was made to raise the height of rural signs above the pavement edge to a minimum of three feet, six inches, as against the old standard of eighteen inches to two feet. The height of signs on pipe posts in cities will be seven feet above the curb instead of the old six-foot, six-inch standard. An exception will be made in rural districts when three or more signs are erected on a single mounting. In this case, the distance from the edge of the pavement to the bottom of the lowest sign will be two feet, six inches.

Another major problem presented was the standardization of protection for workmen, including barricades and flagging procedures. Following favorable reaction to a suggestion by Waller that a committee be appointed to study this problem, a committee composed of R. N. Jennings (chairman), Grover Green, Milton Hays, Tracy Halliburton, E. W. Couch, and Joe A. Russell was selected. They were requested to make a thorough study of this subject and give a report to the Maintenance Division by April 15, 1953.

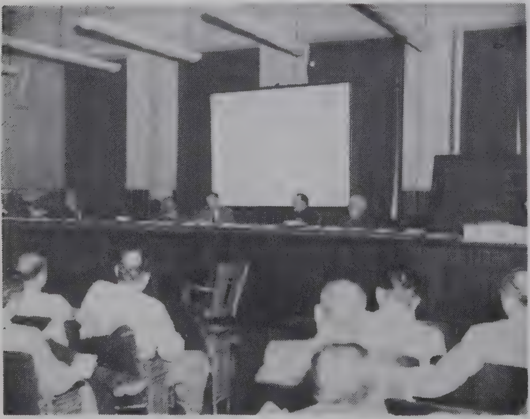
All features of signing, signals, and markings were discussed. M. V. Greer discussed general elements of traffic signing, including their importance, legal authority, functions and classification, general features of design, and standardization, and covered policies and designs for pavement markings.

R. H. Oliver conducted a more detailed discussion on design of signs, explaining their proper use and giving examples of sign layouts at typical highway intersections. Bailey pointed out that in the last five years signing has grown from a part-time or seasonal function, costing about $470, 000 a year, to a full-time operation costing $1, 500, 000 a year, requiring adequate personnel, facilities, and methods for proper handling. This was followed by a discussion of the merits of two systems of handling signing, led by J. W. Cravens of the Paris District and E. W. Couch of the Abilene District.

R. Q. Spencer discussed erection and construction of signs, and problems in application of pavement markings. A. J. Sherrod conducted the discussion on barricades, which led to selection of the committee named above. Paints used for sign construction and pavement markings were discussed by K. K. Moore. John B. Nations, Director, Equipment and Procurement, spoke on procurement of sign materials and equipment. W. J. Alsup discussed traffic signals, assisted by Dale Marvel, who described the system the Houston District follows in traffic signal maintenance. A discussion of speed zoning and marking curves with safe speed indications was led by P.R. Tutt. Remedial measures for high accident locations were presented by W. R. Welty.

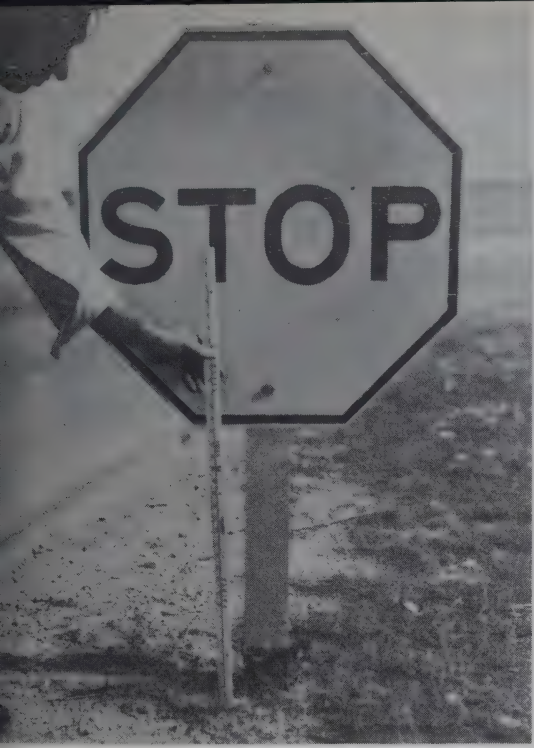
A film prepared especially for the school was presented, showing some of the methods and equipment being used by the Districts for sign construction and pavement marking. The film was made by R. H. Bradley, Division of Traffic Services, with assistance of Districts 2, 8, 13, 16, and 18, and Equipment and Procurement, and Maintenance Divisions.

The interest and full participation of those attending contributed materially to the value of the school. It is hoped that the school will be instrumental in helping the District establish a uniform and high standard system of signs, signals, and markings on our highways that will again make Texas a leader in this field.

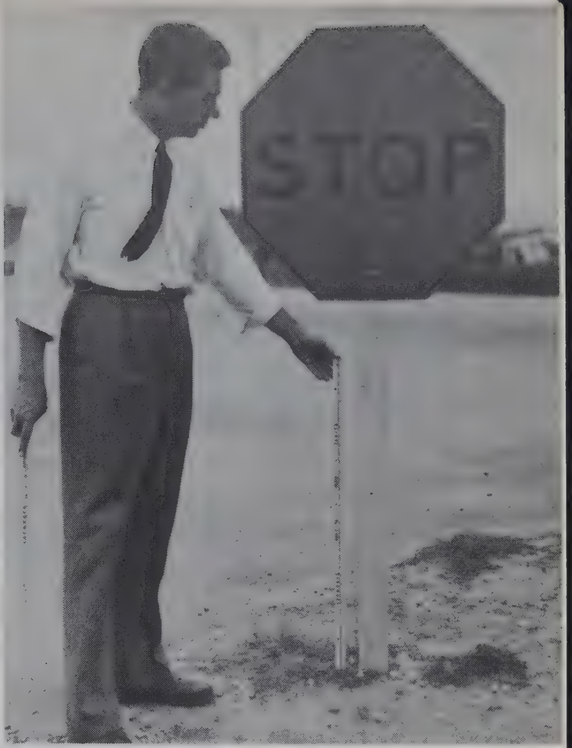


At the opening of the school, D.C. Greer states that he wants the system of signs and markings on Texas highways to be the best in the nation.

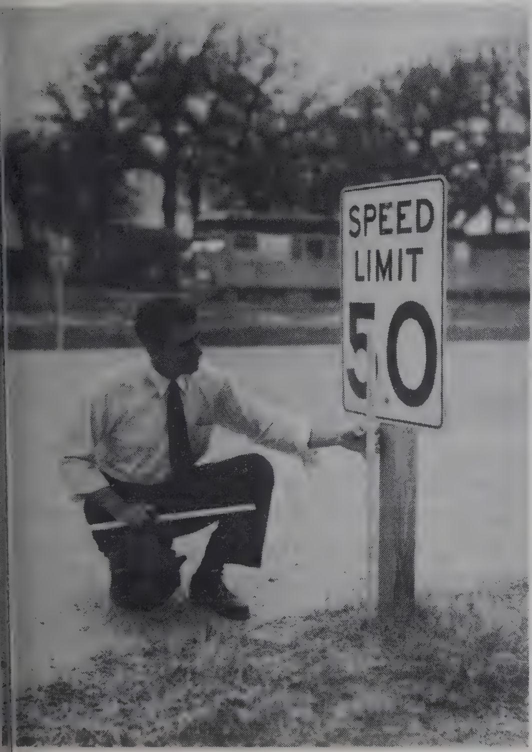
Sight restriction here is caused by the old type directional marker (DM-1). The new standard for this sign (D-1A) greatly reduces this problem.



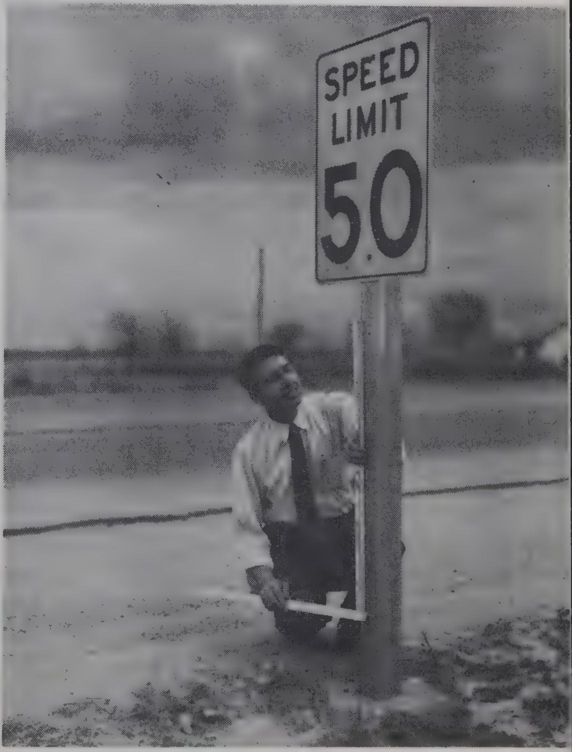
Old



New



Old



New

The effect of the decision made in the school to raise rural-type signs to a minimum of three feet, six inches above the pavement edge will soon be noticeable on our highways. The signs above were erected near Austin at the old and new height standards.

Some Districts put the erection date on signs to assist in observing performance of materials and scheduling replacement.

Group picture of men attending the school.

ROSTER

SCHOOL ON SIGNS, SIGNALS AND MARKINGS

DIST.	NAME
1	J. W. Cravens T. M. Hagood, Jr.
2	A. W. Boyd I. A. Williams
3	O. W. Garrett Cleo Cooper
4	J. M. Harris R. C. Liles
5	J. D. Willson Chillious P. Mills
6	Paul H. Coleman R. A. McCulloch K. E. Duckworth H. L. Johnson
7	R. N. Jennings W. A. Vannoy
8	E. W. Couch George Williams
9	J. A. Snell J. D. Odell
10	I. H. Crutcher, Jr. T. A. McBride
11	J. M. York B. F. Griffin
12	Dale D. Marvel Karl Hackradt
13	H. C. Veazey Frank G. Tschiedel
14	Joe Russell Floyd Self Fred Jeffrey Ed Bluestein
15	R. H. Zeigler Alton Vordenbaum
16	H. Schneeman, Jr. Robert E. Johnston
17	D. L. Hogan Q. Dyess
18	Grover Green Henry R. Grann R. E. Gilder
19	Roy Johnston C. J. Pilant
20	Milton Hayes Homer S. Bean
21	Tracey Haliburton Ross Fitzpatric
22	W. L. Ford
23	E. M. Pritchard A. C. Pluckhahn
24	Max W. Moore L. B. Harrison
25	Douglas R. Doshier Marvin E. Estoll

Comparison Cost Of Concrete Girder And Slab Design Bridges

C.E. Gresham, Senior Resident Engineer
District 25

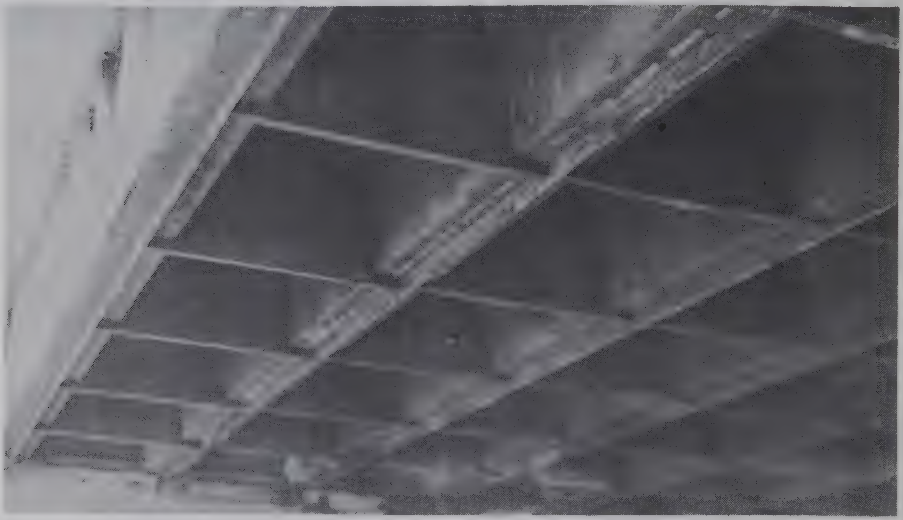
We have 870 feet of concrete girder bridge under contract in District 25 at the present time. The two contracts include a 60-, 600-, 90-, and 180-foot bridge--all of which are on farm to market roads and are of the same design. The plans for the two projects included an alternate design using the slab design bridge (FS-8-20-25) for farm to market roads. On the project which included 270 feet of CGC-10 bridge with the above-mentioned alternate, we received four bids. Three contractors bid the alternate bridge FS-8-20-25. Bid prices on concrete for the slab bridge ranged from $46.20 to $50. The only contractor bidding the CGC-10 design bridge bid $41.50 per cubic yard of concrete and as a result of his low bid on bridge items, he was the successful bidder on the project.

Approximately two months later we asked for bids on another project including 600 feet of bridge work with the same design proposed for the bridges. Contractors complained that they were unable to bid the FS-8-20-25 slab bridge design for several reasons. The most outstanding complaint was the fact the FS-8-20-25 design has a 25-foot span length as compared with the 30-foot span length of the CGC-10, which would require 495 feet more piling. The amount of concrete and steel in the two bridge designs is so near the same that it is not necessary to compare the difference in quantity of those two items. The next big difference the contractors mentioned was the cost of the concrete for the CGC-10 and the slab design. Nearly all of the contractors agreed the concrete for the girder bridge was cheaper if they owned the required steel forms; however, they all were of the opinion that they could overcome the small difference in the cost of the concrete. Figured any way, they all agreed that the man with the steel forms for the CGC-10 design still had an advantage of from five to eight thousand dollars.

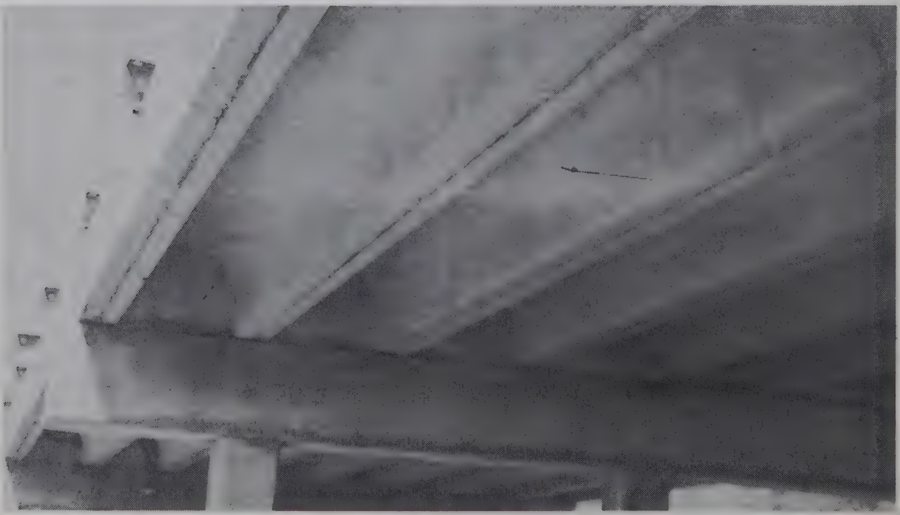
Of the seven bidders on the latter project only two contractors had purchased the forms previously. When the bids were tabulated, not a single bid was received on the FS-8-20-25 alternate design. The low bid on the project was $42 for concrete. We are informed that the successful bidder plans to purchase a set of steel forms (enough for four spans of 20-foot, 4 1/2-inch roadway.

According to information received by this office, steel companies will build the necessary steel forms and lease them to the contractors with an option to buy or rent them for a particular project.

It seems to us that since the forms for the CGC design are available to contractors under the above conditions there should be no reason why all contractors cannot bid the girder bridge with very competitive results. We plan to build two other bridges at separate locations in this district, and we think we will get good bid prices by using the bridge design requiring the steel forms. Two sets of steel forms will be in this area about the time the contract for the two bridges are to be let and the contractor can submit bids on the two bridges without having to include a large bill of lumber and some expensive labor for building forms. The use of the steel form for the construction of bridges is the nearest approach we have made toward "mass production" of bridges to date. All of us are aware of the big advantage of mass production of any item. Since there are so many bridges that need to be built, if we can reduce the cost of bridges by any means of mass production, it would appear to be well worth the effort.



Metal forms in place after pouring of typical 30-foot span.



Typical 30-foot span after stripping forms.

TEXAS HIGHWAY DEPARTMENT
San Angelo, Texas
January 19, 1953

TO: Resident Engineers
Maintenance Foreman
District Equipment Supervisor
Office Engineer

SUBJECT: Reporting for the Maintenance and Construction Bulletin.

Gentlemen:

You have all received copies of the Construction and Maintenance Information Circular No. 3-52. It is suggested in this Circular that an Assistant Reporter be appointed in each of the residencies and maintenance sections to report items to the District Reporter for processing. We have all found the bulletin to contain articles of great interest and value. To continue its successful publication there must be a reservoir of topics available for selection. One article per month has been requested from each District so this will not be an easy task.

Within a District this may be accomplished by keeping a continuing list of worthwhile ideas or topics for use. Not only should the novel, catchy topic or idea be considered but all subjects of interest or benefit to the Highway Department. The District Reporter will keep such a list of topics for the District and when a topic is selected for submission it may be developed by the Assistant Reporter and/or the person suggesting the topic. Any assistance needed in the preparation of the article will be given. Using this method there will be no duplication of effort within the District.

Another source of material for the bulletin are things that you or your employees would like to know or subjects that you would like to have discussed. The discussion might be by someone within the District or by someone outside the District.

You are in the best positions to suggest topics and to solicit and evaluate suggestions and ideas from your employees. Those listed below are requested to accept appointment as Assistant Reporters and assist in furnishing material for publication. Again it is felt that at the present time it is preferable to have a list of topics for development.

List of Assistant Reporters:

W.N. Hardeman,	Senior Resident Engineer,	Junction, Texas
Hubert Fields,	Maintenance Foreman,	Junction, Texas
S.M. Loeffler,	Maintenance Foreman,	Sonora, Texas
C.C. Stroud,	Senior Resident Engineer,	Sonora, Texas
Scottie Houston,	Maintenance Foreman,	Ozona, Texas
H.L. Bailey,	Senior Resident Engineer,	Big Lake, Texas
Everett Roe,	Maintenance Foreman,	Barnhart, Texas
Jim Butler,	Maintenance Foreman,	Sterling City, Texas
Henry Pierce,	Maintenance Foreman,	Eden, Texas
Felix Itz,	Senior Resident Engineer,	Ballinger, Texas
H.P. Largent,	Maintenance Foreman,	Ballinger, Texas
A.J. Jennings,	Senior Resident Engineer,	San Angelo, Texas
W.H. Hopewell,	Maintenance Foreman,	San Angelo, Texas
Walter Vannoy,	District Equipment Supervisor,	San Angelo, Texas
D.N. Carlton,	Office Engineer,	San Angelo, Texas

Please notify L. K. Willis, District Reporter, of your acceptance as Assistant Reporters.

There is some doubt that the Construction and Maintenance Bulletin is receiving sufficient distribution. Additional copies can be furnished at small cost and we would like with your acceptance your estimate of the number of copies of the bulletin necessary for proper distribution in your organization.

Sincerely yours,

T. J. Kelly
District Engineer
District No. 7

By: L. K. Willis
Ass't. Dist. Engr.

TJK:LKW:rns

"Comments From the Traveling Public"
OVER THE HIGHWAYS

. . . I should like to take this opportunity to thank the Texas Highway Commission for their great help in preparing my vacation in Mexico.

When my buddy and I passed through Texarkana, a Mr. Hill and I believe a Mr. Standridge gave us all possible assistance and folders to help us along. Nowhere in the country were we greeted by more friendly, helpful people than in Texas, and especially your Traffic Service Division men in Texarkana.

Of course, I am not from Texas, but from now on it is my adopted state. You have the kind of people I like. I am leaving for Korea very shortly now, and just for the record there'll be another "Texas Booster" over there from now on. . .

Bill Vickers
Fairfield, Conneticut
(The biggest little state in the Union.)

. . . Your December issue of Construction & Maintenance Bulletin No. 18 is very interesting and constructive as usual. There are fifteen men under my supervision here and if possible I would like to have some of the pamphlets on "Instructions To Flagmen". . .

Maintenance Foreman

. . . This summer I had a nice vacation trip through seventeen states. I must express true appreciation about the little roadside park just outside your town (Bovina). . .

Addie M. Long
Stockton, California

"PLEASE DRIVE CAREFULLY" CARD SCORES AGAIN . . .

. . . This is a most courteous gesture and the State Highway Department can certainly stand the good-will thus generated. More of this needs to be done. Keep up the good work. . .

J. O. Boothe
Lockhart, Texas

. . . Texas was most outstanding, in my opinion, and in connection with their highway service they have a tourist information bureau on U. S. Highways at the State lines. This information bureau is very cooperative and courteous in giving out maps and indicating portions of highways that are under construction - - -

As you will note in the little booklet transmitted herewith, the State Highway Department of Texas issues a small brochure giving some of the interesting facts about each of the large cities, in addition to the map which I have previously mentioned. I also noted they have small wayside parks along the main highways where the tourist may stop and rest, or have lunch. However, the chain restaurant owners probably would object to this in California.

R. F. Witter, Director
Bureau of Right of Way
and Land
Los Angeles, California

. . . Since I am overflowing with gratitude for the kindness shown me by two members of your department, I feel that I want to write you and commend you on your sound judgment in selecting men.

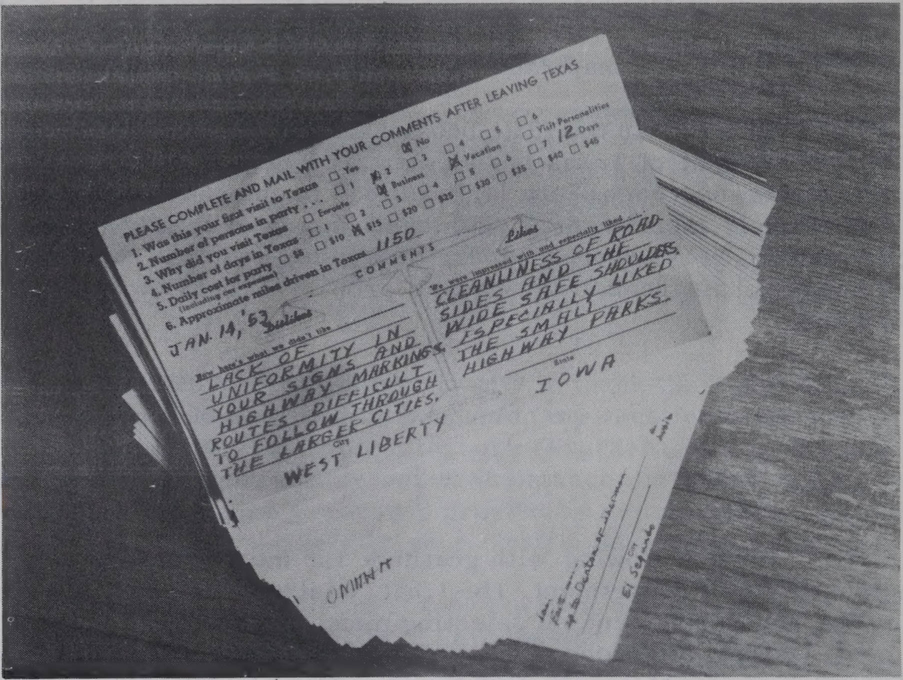
Last Tuesday afternoon about 1:30 I tried to ford stream of water on Highway 66 between Maypearl and Itasca. The highway was completely covered and it seemed that it was a distance of a fourth of a mile. The wind was blowing very hard, (as you can readily see I am making excuses for my poor driving), anyway, I was off the highway before I knew it and felt that I was floating down stream. My car was filled up to seat level with water. There I was, stranded, in what seemed to me at the time, the largest body of water I had ever seen. I actually was beginning to become seasick, when the wonderful men from the Highway Department appeared. Disregarding all physical comfort they pulled off their shoes, rolled up their trouser legs and waded out to me. They soothed my frightened nerves and assured me they would be back shortly with a tractor to pull me out. True to their promise they were back in a very few minutes. My car was pulled into Maypearl and while the service station attendants took care of my car, the men took me to a cafe for coffee and to dry out my shoes. They even tried to inflate my suddenly deflated ego by telling me that anyone might have done the same thing.

The whole purpose of this letter is to request that if there are ever any medals to be handed out, please reserve two for K. M. Bates and W. H. Scarberry. Anyone who is Spartan enough to stand with barefeet in icy cold water, and be able to smile and be pleasant, deserves some recognition. . .

Bess Pratt
Waxahachie, Texas

. . . We didn't like the loose livestock on the highways. Why build 60 M. P. H. highways and then allow a condition to exist that makes it unsafe to drive over 30 M. P. H. ? Most motorists drive 60 M. P. H. and hope for the best, but some don't get it. . .

W. H. Dunaway
Bartlesville, Oklahoma



PLEASE COMPLETE AND MAIL WITH YOUR COMMENTS AFTER LEAVING TEXAS

1. Was this your first visit to Texas ☐ Yes ☒ No
2. Number of persons in party . . . ☐ 1 ☒ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6
3. Why did you visit Texas ☐ Enroute ☒ Business ☒ Vacation ☐ Visit Personalities
4. Number of days in Texas ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 12 Days
5. Daily cost for party (including car expenses) ☐ $5 ☐ $10 ☒ $15 ☐ $20 ☐ $25 ☐ $30 ☐ $35 ☐ $40 ☐ $45
6. Approximate miles driven in Texas 1150

COMMENTS

JAN. 14, '53

Dislikes

Here here's what we didn't like

LACK OF
UNIFORMITY IN
YOUR SIGNS AND
HIGHWAY MARKINGS.
ROUTES DIFFICULT
TO FOLLOW THROUGH
THE LARGER CITIES.

Likes

We were impressed with and especially liked

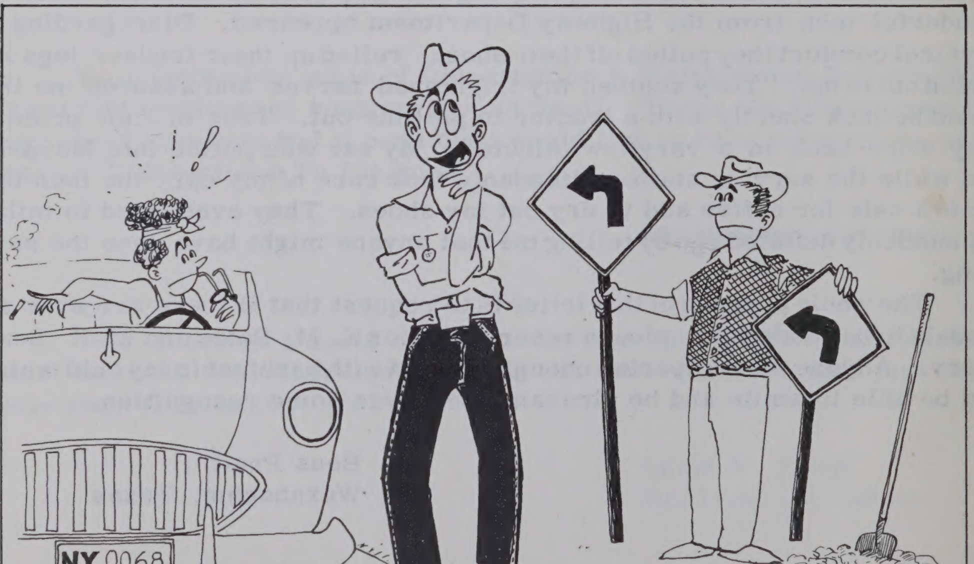
CLEANLINESS OF ROAD
SIDES AND THE
WIDE SAFE SHOULDERS.
ESPECIALLY LIKED
THE SMALL
HIGHWAY PARKS.

City WEST LIBERTY

State IOWA

The above 80 cards, out of 712 received, list complaints received during January from out-of-state tourists criticizing our highway markings and signs.

DEPARTMENT ADOPTS USE OF HIGHER SIGNS ◦ ◦ ◦



"Well, Maam, the short one wuz bought out of state and the tall one grew in TEXAS."

State Highway Department
DISTRICT No.
SAN ANTONIO, TEXAS
S. A. A. E. F.
MAR 3 1953
RECEIVED